

murco petroleum limited**MATERIAL SAFETY DATA SHEET****RESIDUAL FUEL OILS****MEDIUM FUEL OIL
HEAVY FUEL OIL (HFO)
LOW SULPHUR FUEL OIL
INTERMEDIATE FUEL OIL
MARINE FUEL OIL****BS 2869 CLASS F
BS 2869 CLASS G
BS 2869 CLASS G
BSMA100 CLASS RMF25
BSMA100 CLASS RML45****1 IDENTIFICATION OF THE SUBSTANCE & OF THE COMPANY / UNDERTAKING****IDENTIFICATION OF THE SUBSTANCE OR PREPARATION:**

These oils are used as fuels in industrial heating plant (boilers and furnaces), in marine boilers and in low speed diesel engines.

Fuel Oils, Residual : CAS No. 68476-33-5

EINECS No. 270-675-6

COMPANY IDENTIFICATION: **Murco Petroleum Limited
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2 COMPOSITION / INFORMATION ON INGREDIENTS:

Residual Fuel Oils are paraffinic, naphthenic and aromatic hydrocarbons mainly from blends of residues from crude oil distillation but which may contain proportions of petroleum middle distillates and catalytically or thermally cracked components. Small quantities of Hydrogen Sulphide and light hydrocarbons may be present. Compounds of trace metals such as Vanadium are commonly present in the ash after combustion.

3 HAZARDS IDENTIFICATION

Residual fuel oils are customarily supplied as "heated oils", usually in the temperature range 60 - 75°C.

Light hydrocarbon vapours can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperatures below the normal flash point of the fuel. **Tank headspaces should always be regarded as potentially flammable.**

(**Note:** flash point must not be regarded as a reliable indicator of potential flammability).

If hot product causes burns, the affected area should be flooded immediately with, or immersed in, cold water for 10 minutes, or longer if pain persists. Burns should be covered with clean cotton or gauze, and medical advice sought as soon as possible.

Injection of fuel under the skin may have serious effects, seek medical advice urgently.

Residual fuel oils, particularly when catalytically and thermally cracked hydrocarbons are present, may contain polycyclic aromatic hydrocarbons (PCAs); some PCAs have been classified as category 2 carcinogens.

Hydrogen Sulphide (H₂S) gas may accumulate in the confined vapour spaces above fuel oil in storage tanks and the bulk storage compartments of transport vehicles. Hydrogen Sulphide is an extremely toxic gas. An Occupational Exposure Standard for Hydrogen Sulphide is listed in HSE Guidance Note EH40: currently:

Long term exposure limit - (8 hour TWA reference period) - 5 ppm, 7 milligrams per cubic metre.

Short term exposure limit - (15 minute TWA reference period) - 10 ppm, 14 milligrams per cubic metre.

There is no appropriate occupational exposure limit for residual fuel oils, due to the presence of polycyclic aromatic hydrocarbons. Avoid, as far as is practicable, the inhalation of vapour, mists or fumes generated during use. If operations are such that excessive generation of vapour, mists or fume is generated, to which operators may be unavoidably exposed, suitable approved respiratory equipment should be worn.

The use of respiratory equipment must be strictly in accordance with the manufacturer's instructions and any statutory requirements covering its selection and use.

4 FIRST AID MEASURES	
<p><u>TYPE OF EXPOSURE</u></p> <p>Ingestion</p> <p>The swallowing of small amounts is unlikely to have adverse effects; larger amounts may cause irritation with diarrhoea and vomiting.</p> <p>Skin</p> <p>Unlikely to cause irritation on single contact. Prolonged or repeated contact may cause dermatitis which could eventually lead to irreversible skin disorders. Injection of fuel under pressure through the skin may have serious effects which at first may not seem serious but, within hours, may become very painful. Contact with hot product may cause thermal burns.</p>	<p><u>FIRST AID MEASURES</u></p> <p>Ingestion</p> <p>Wash mouth out with water and give water to drink. If a large amount has been swallowed get medical advice; DO NOT INDUCE VOMITING BECAUSE OF THE DANGER OF ASPIRATION.</p> <p>Skin</p> <p>Wash skin as soon as possible with soap and water. Change contaminated clothing immediately and launder before reuse. Get medical advice if irritation persists.</p> <p>Any injection of fuel under the skin should be considered an EMERGENCY - get Medical Advice URGENTLY.</p> <p>Flood with cold water for at least 10 minutes. Get medical advice</p>
<p>Eyes</p> <p>May cause short-term irritation with redness and stinging.</p> <p>Inhalation</p> <p>Fumes or vapour may cause irritation to eyes and mucous membranes, and drowsiness leading to loss of consciousness. Hydrogen Sulphide (H₂S) gas may accumulate in vapour spaces above fuel oil in tanks.</p>	<p>Eyes</p> <p>Wash out immediately with large amounts of water. If redness and/or irritation continues get medical advice.</p> <p>Inhalation</p> <p>If inhalation of vapour causes irritation or drowsiness remove IMMEDIATELY to fresh air. Get medical advice.</p>

5 FIRE-FIGHTING MEASURES

Extinguish with Dry Powder or Foam. For small fires use CO₂.

Note - Flash Point 66°C min, but if fuel contacts hot surface or leaks from high pressure fuel pipes then the vapour/mist generated will create a flammability hazard.

Fires in closed or confined spaces should be tackled by trained personnel who should wear breathing apparatus.

6 ACCIDENTAL RELEASE MEASURES

Treat any spillage as a fire hazard. Spray, vapour or mist can be a potential fire or explosion hazard.

May cause damage to surfaces making them SLIPPERY.

Contain spillage - do not wash spillage down drain. Absorb using absorbent clay, diatomaceous clay or other suitable absorbent.

7 HANDLING AND STORAGE**7.1 Handling**

Residual fuel oils are primarily designed to be used in closed systems associated with boilers or engines. As such, handling should only be by competent persons. When handling, attention should be given to the avoidance of skin contact and avoidance of sources of ignition. In normal use, this material is likely to be **hot**.

7.2 Storage

The design, construction, and maintenance of bulk storage and handling facilities are covered by codes of practice published by the Institute of Petroleum, British Standards and the Health and Safety Executive.

Any containers should be stored under cover out of direct sunlight, in well ventilated conditions. Care should be taken to avoid over-stacking.

8 EXPOSURE CONTROL / PERSONAL PROTECTION

Protective clothing - Where skin contact is likely protective clothing should be worn including impervious GLOVES and EYE PROTECTION. Ensure good ventilation. When handling heated material, suitable protective clothing should be worn to prevent thermal burns.

Respiratory protection - Unlikely to be required in normal use but care should be taken when sampling or gauging in case of an accumulation of Hydrogen Sulphide (H₂S) which is toxic and flammable (see Section 3. HAZARDS IDENTIFICATION). Protective clothing and respirators must be worn when overhauling plant or storage facilities.

Hand and skin protection - Hand and skin protection recommended at all times. Where exposure is likely protective clothing must be worn, including nitrile gloves approved to BS EN 374 with a breakthrough time of >360 minutes.

Eye protection - Eye protection approved to BS EN 166 is recommended at all times

9 PHYSICAL AND CHEMICAL PROPERTIES

Typical properties:

Appearance	Dark brown/black viscous fluid
Odour	Characteristic
pH	Mildly acidic
Boiling Range °C	160 - 500
Flash Point (PMC) °C	66 min
Flammability Limits % vol	1 - 6
Auto ignition temperature °C	
Explosive properties	Not applicable
Oxidising properties	Not applicable
Reid Vapour Pressure at 37.8 °C kPa	<0.1
Density at 15°C	0.95 - 1.005
Solubility - water	Very low
- fat	Not available
Partition coefficient - Log Pow	2.7 - 6 for components
Viscosity cSt @ 40°C	10 - 40
Vapour density (relative to air)	> 5
Evaporation rate	Very low

10 STABILITY AND REACTIVITY

Conditions to Avoid - excessive heat

Materials to Avoid - may react with strong oxidising materials.

Hazardous Decomposition Products - thermal decomposition may lead to the formation of a multiplicity of compounds some of which may be hazardous. With incomplete combustion smoke and hazardous fumes and gases, including carbon monoxide may be formed.

11 TOXICOLOGICAL INFORMATION

Toxicity following a single exposure (oral, dermally or by inhalation) to high levels of residual fuel oils is normally of a low order. Under certain conditions small quantities of Hydrogen Sulphide, a toxic gas, may be liberated into the vapour phase. Residual fuel oils may contain polycyclic aromatic hydrocarbons and have been classified as category 2 carcinogens.

Dusts generated during the removal of combustion deposits will be harmful if inhaled. Repeated contact may result in serious irreversible disorders.

12 ECOLOGICAL INFORMATION

Expected to harm aquatic organisms; films formed on water may affect oxygen transfer and damage organisms. Likely to biodegrade slowly.

13 DISPOSAL CONSIDERATIONS

Dispose by incineration or by methods approved by local authority.
Do not discharge into the public drainage system, or marine and inland waterways.
Fuel oils used for marine applications should be disposed of in accordance with MARPOL Regulations.

14 TRANSPORT INFORMATION**TRANSPORT CLASSIFICATION**

HAZCHEM Code: 3/Z (voluntary)

Symbol: None

UN Number (Substance Identification Number): Flash point > 61°C No number (non hazardous)

IMO: Not classified as hazardous for transportation.

ICAO Hazard Class/IATA Hazard Class: Not restricted.

ADR/RID Hazard Class: Not classified as hazardous for transportation

15 REGULATORY INFORMATION**LABELLING**

Symbol: Black Skull & Cross Bones

Classification: Toxic. Dangerous for the environment

- R45 - May cause cancer.
R52/53 - Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R66 - Repeated exposure may cause skin dryness or cracking
- S53 - Avoid exposure - obtain special instructions before use.
S45 - In case of accident, or if feeling unwell, seek medical advice immediately - show the label where possible.
S61 - Avoid release to environment. Refer to special instructions/safety data sheet

16 OTHER INFORMATION

Further information can be found in various publications, a list of which may be obtained from the Health and Safety Executive.

COMAH: HSE's Guidance on the Regulations ["A guide to the Control of Major Accident Hazards Regulations 1999, ISBN 0-7176-1604-5] paragraph 340, HSE state that these products should **not** be treated as "Toxic" for COMAH purposes. Residual fuel Oils are outside the scope of COMAH.

This data sheet has been prepared in accordance with the requirements of the Data Sheet Directive 91/155/EEC as amended by Directive 2001/58/EC.

LEGAL NOTICE

The information in this Data Sheet applies only to the products designated herein and produced or supplied by Murco Petroleum Ltd or its subsidiary companies. It is based on our experience and on the data available to us at the time of its issue and is accurate to the best of our knowledge. The customer is strongly advised to observe and ensure that its employees and customers observe all directions contained herein. However, no warranty is made or implied that the information is accurate or complete and no liability will be accepted whatsoever - (other than liability in respect of the matters referred to in Section 2 Unfair Contract Terms Act 1977) arising out of the use of the information or the products designated herein. Where third party products are used in conjunction with or instead of products produced or supplied by Murco Petroleum Ltd or its subsidiary companies, the customers should himself obtain all necessary technical, health and safety information about such products from the third party.

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