

# SAFETY DATA SHEET

## LOW SULFUR FURNACE FUEL OIL



### 1. Identification of Substance or Mixture and of the Supplier

**Product Name** : Low Sulfur Furnace Fuel Oil  
**Other Names** : LSFO, Fuel Oil, Residual Fuel Oil, Fuel Oil 180  
**Recommended Use** : Fuel for thermal power plants, Fuel for boilers, industrial furnaces and other combustion equipment. This product should not be used in applications other than those recommended.  
**Suppliers Details** : **Attock Refinery Limited**  
 P.O. Refinery, Morgah, Rawalpindi, Pakistan  
 Telephone/Fax Number  
 Tel: +92-51-5487041  
 Fax: +91-51-5487041  
**Emergency Phone Number** : +92-51-5487041

### 2. Hazard Identification

**GHS Classification** : **Flammable Liquids**, Category 3 & 4  
**Aspiration Hazard**, Category 1  
**Acute toxicity, inhalation**: Category 4  
**Eye Damage/Irritation**, Category 2  
**Skin Corrosion/Irritation**, Category 2  
**Hazardous to the Aquatic Environment- Long-term -Hazard**, Category 3

**GHS Label Elements & Precautionary Statements**



**Signal Word**  
 Danger

**Hazard Statement (s)**

**H300 + H330** Fatal if swallowed or if inhaled  
**H315** Causes skin irritation  
**H319** Causes eye irritation  
**H335** May cause respiratory irritation

- H336** May cause drowsiness or dizziness
- H340** May cause genetic defects
- H351** Suspected of causing cancer
- H412** Harmful to aquatic life with long lasting effects

**Precautionary Statement (s) – Prevention**

- P201** Obtain special instructions before use
- P202** Do not handle until all safety precautions have been read and understood
- P210** Keep away from source of ignition, hot surface and open flames.  
No smoking
- P264** Wash contaminated skin thoroughly after handling.
- P273** Avoid release to the environment
- P280** Wear protective gloves/protective clothing/eye protection/face protection.
- P281** Use personal protective equipment as required

**Precautionary Statement (s) – Response**

- P301+P310** IF SWALLOWED: Immediately call doctor/ physician.
- P302+P352** IF ON SKIN: Wash with plenty of soap and water
- P304+340** IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
- P308+P313** IF exposed or concerned: Get medical advice/attention.
- P362** Take off contaminated clothing and wash before reuse
- P370+P378** In case of fire: Use foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only for extinction.
- P391** Collect spillage

**Precautionary Statement (s) – Storage**

- P403+P235** Store in a well-ventilated place. Keep cool.
- P405** Store locked up

**Precautionary Statement (s) - Disposal**

- P501** Dispose of contents/container to an approved waste disposal plant

**3. Composition / Information on Ingredients**

**Chemical Identity** : Complex mixture of liquid hydrocarbons having Sulphur content ranges from 0.70 to 0.99 mass percent.

**Composition Information**

| Name              | CAS Number | Percent (%) |
|-------------------|------------|-------------|
| Residual Fuel Oil | 68476-33-5 | 96.5 ~ 99.0 |
| Sulphur           | 7704-34-9  | 0.5 – 1.0   |

#### 4. First-Aid Measures

|                    |   |
|--------------------|---|
| <b>Inhalation</b>  | : If inhaled, remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately. |
| <b>Ingestion</b>   | : Do not induce vomiting. Do not give liquids. Seek medical attention.  |
| <b>Skin</b>        | : Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water. Obtain medical attention  |
| <b>Eye Contact</b> | : If in eyes, immediately flush with clean and low pressure water for at least 15-minutes. Hold eyelids open to ensure adequate flushing. Seek medical attention.   |

#### 5. Fire Fighting Measures

|  |   |
|--|---|
| <b>Hazchem Code</b>                          | : Not applicable  |
| <b>Suitable Extinguishing Media</b>          | : For large fires 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. For small fires dry chemical, fire fighting foam, CO <sub>2</sub> or other gaseous agents suitable for a class B fire.                   |
| <b>Unsuitable Extinguishing Media</b>        | : Do not use water in a jet.  |
| <b>Hazards from Combustion Products</b>      | : Carbon dioxide, carbon monoxide, non-combusted hydrocarbons   |
| <b>Specific Hazards during Fire Fighting</b> | : Sealed containers that are exposed to fire should be cooled with water. Do not use direct water jets on the burning products as this may cause steam explosions and the spread of the fire. Simultaneous use of foam and water on the same surface is to be avoided as water may destroy the foam     |
| <b>Decomposition Temperature</b>             | : Not Available   |
| <b>Precautions in connection with Fire</b>   | : Special protective equipment for firefighters. In case of fire: Wear self-contained breathing apparatus. Use water spray or fog for cooling exposed containers. Evacuate personnel to a safe area. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. |

## 6. Accidental Release Measures

**Personal Precautions, Protective Equipment and Emergency Procedures** : Use personal protective equipment. Extinguish or remove all sources of ignition and stop leak if safe to do so. Increase ventilation. Evacuate personnel to safe areas.

**Environmental Precautions** : Avoid release to the environment. Avoid subsoil penetration.

**Methods and Materials for Containment and Cleaning up** : If possible contain the spill. Contain liquid with sand or soil. Prevent spilled material from entering drains, sewers, and open waterways. Use clean non-sparking tools to collect the material and place into suitable labelled containers for subsequent recycling or disposal. Dispose of waste according to the applicable local and national regulation

## 7. Handling & 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 moreover, tank-filling operations. Recycle all waste where possible.

**Safe Storage Conditions** : Avoid inhalation of vapours and mists, and skin or eye contact. Use only in a well ventilated area. Keep containers sealed when not in use. Do not use near ignition sources. Do not pressurise, cut, heat or weld containers as they may contain hazardous residues. Maintain high standards of personal hygiene by washing hands prior to eating, drinking, smoking or using toilet facilities. Avoid exposure. Do not handle until all safety precautions have been read and understood. When using do not eat or drink. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. When handling product in drums, safety footwear should be worn and proper handling equipment should be used

**Recommended Material** : For containers, or container linings use mild steel, stainless steel. Aluminum may also be used for applications where it does not present an unnecessary fire hazard. Examples of suitable materials are: high density polyethylene (HDPE) and Viton (FKM), which have been specifically tested for compatibility with this product. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.

**Unsuitable Materials** : Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene.

## 8. Exposure Control / Personnel Protection

### Occupational Exposure Limit Values

| Component        | CAS No     | Value Type<br>(Form of Exposure) | Control Parameters /<br>Permissible Concentration | Basis |
|------------------|------------|----------------------------------|---|-------|
| Furnace Fuel Oil | 68476-33-5 | TWA                              | 100 mg/m <sup>3</sup>                             | OSHA  |

TWA (Time Weighted Average): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day week.

**Biological Limit Values** : No biological limit available

**Appropriate Engineering Controls** : This substance is hazardous and should be used with a local exhaust ventilation system, drawing vapours away from workers' breathing zone. A flame-proof exhaust ventilation system is required. If the engineering controls are not sufficient to maintain concentrations of vapors/mists below the exposure standards, suitable respiratory protection must be worn.

**Respiratory Protection** : If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements

**Eye Protection** : Safety glasses with side shields, chemical goggles or full-face shield as appropriate should be used. Final choice of appropriate eye/face protection will vary according to individual circumstances.  
Eye protection devices should conform to relevant regulations

**Hand Protection** : Wear gloves of impervious material such as nitrile gloves (Breakthrough time of > 240 minutes) neoprene, PVC gloves. Final choice of appropriate gloves will vary according to individual circumstances i.e. methods of handling or according to risk assessments undertaken.  
Occupational protective gloves should conform to relevant regulations.

**Body Protection** : Suitable protective work wear, e.g. Cotton overall/ dangries.

## 9. Physical & Chemical Properties

|                                       |                 |
|---------------------------------------|-----------------|
| Physical State                        | : Liquid        |
| Ordour                                | : Petroleum     |
| Color                                 | : Brown Black   |
| Pour Point °C                         | : ≤24           |
| Sulphur %                             | : ≤ 1.0         |
| Specific Gravity @ 15.6°C/<br>15.6°C: | : 0.900 – 0.960 |
| Kinematic Viscosity at 50°, cSt       | : <180          |
| Flash °C                              | : >66           |

## 10. Stability & Reactivity

|  |  |
|--|--|
| Chemical Stability                     | : Stable under normal conditions of storage and handling   |
| Conditions to Avoid                    | : During storage and handling avoid excess heat generation, sparks and flames  |
| Incompatible Products                  | : Strong oxidizing agents, sulphuric acid, nitric acid, caustics, aliphatic amines and amides  |
| Hazardous<br>Decomposition<br>Products | : Burning of this product gives rise to a complex mixture of gases and airborne particles including metallic oxides, sulphur oxides and oxides of carbon |

## 11. Toxicological Information

|                        |   |
|------------------------|---|
| Toxicology Information | : <b>Acute Toxicity – Oral</b><br>LD50 :( Rat) : >2000 mg/kg                                    |
|                        | : <b>Acute Toxicity – Inhalation</b><br>LD50 :( Rat) : >5 mg/l / 4h                             |
|                        | : <b>Acute Toxicity – Dermal</b><br>LD50 :( Rat) : >2000 mg/kg                                  |
| Ingestion              | : Swallowing can result in nausea, vomiting and irritation of the gastrointestinal tract.       |
| Inhalation             | : Inhalation of product vapors may cause irritation of the nose, throat and respiratory system. |
| Skin                   | : Repeated exposure may cause skin dryness and cracking and may lead to dermatitis.             |
| Eye                    | : May be an eye irritant  |

**Respiratory Sensitization** : Not expected to be a respiratory sensitizer

**Skin Sensitization** : Not expected to be a skin sensitizer

**Germ cell Mutagenicity** : Not considered to be a mutagenic hazard

**Carcinogenicity** : Suspected to cause cancer

**Reproductive Toxicity** : Not considered to be toxic to reproduction

**Aspiration Respiratory Organs Hazard** : Not considered an aspiration hazard

## **12. Ecological Information**

**Toxicity** : Incomplete ecotoxicological data are available for this product. The information given below is based partly on knowledge of the components and the ecotoxicology of similar products.

**Ecotoxicity** : 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)

**Biodegradability** : Oxidises rapidly by photochemical reactions in air

**Persistence/  
Degradability** : Expected to be inherently biodegradable

**Mobility** **Water:** 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  
**Soil:** Limited mobility in soil; large quantities may penetrate soil and contaminate groundwater.

**Bioaccumulative Potential** : Has the potential to bioaccumulative. Contains components which may have the potential to bioaccumulate. May cause tainting of fish and shellfish.

## **13. Disposal Considerations**

Dispose of waste according to applicable local and national regulations. Labels should not be removed from containers until they have been cleaned. Do not allow into drains or watercourses or dispose of where ground or surface waters may be affected.

## **14. Transport Information**

**Hazard Class**

3

**U.N. Number**

1268

**Packaging Group**

III

## **15. Regulatory Information**

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of chemicals (GHS) including Work, Health and Safety regulations.

## **16. Other Information including Information on Preparation and revision of the SDS**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process.