

Substance **FUEL OIL**

1 NAME OF SUBSTANCE AND COMPANY

1.1 Product Identification

Name of the Substance: Fuel Oil, Heavy Fuel Oil

EC No. 270-675-6

CAS No. 68476-33-5

REACH Registration No. 01-2119474894-22-0029

1.2 Product Use:

Established use: liquid fuel

1.3 Detailed Information on MSDS Supplier

Manufacturer:

Public Company *ORLEN Lietuva*
Juodeikiai, LT-89467 Mažeikiai District, Lithuania
Tel.: (370) 443 92121
Telefax: (370) 443 92525
E-mail address: info@orlenlietuva.lt

1.4 Emergency telephone:

Public Company ORLEN Lietuva (24 hours a day): 370 443 92510

Poison Center (24 hours a day): +37052362052, mob. +370 687 53378

2 POSSIBLE HAZARDS

2.1 Classification of the Substance

2.1.1 Classification according to Regulation (EC) No. 1272/2008: H304, H332, H350, H361, H373, H410

2.1.1 Classification according to Council Directive 67/548/EEC: Xn; N; Carc. Cat. 2; R20, R45, R48/21, R63, R66, R50/53.

2.2 Labeling

Labeling and classification according to Regulation (EC) No. 1272/2008

Signal word:

DANGER.

Hazard pictograms



GHS07

GHS08

GHS09

Hazard statements:

H332: Harmful if inhaled.

H350: May cause cancer.

H361: Suspected of damaging fertility or the unborn child.

H373: May cause damage to organs.

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

Substance **FUEL OIL****Precautionary statements:**

P201: Obtain special instructions before use.
P260: Do not breathe dust/fume/gas/mist/vapours/spray.
P273: Avoid release to the environment.
P281: Use personal protective equipment as required.
P308+P313: If exposed or concerned: Get medical advice/attention.
P501: Dispose of contents/container to ...

Additional labeling requirements (EUH)

EUH066: Repeated exposure may cause skin dryness or cracking.

Other hazards

Fuel Oil is flammable liquid which when at ambient temperature is attributed to products of low hazard.

Contact with hot Fuel Oil, when the product is heated up for warehousing or handling purposes, may cause thermal burns. Fuel Oil may contain a considerable content of polycyclic aromatic hydrocarbons, which are classified as carcinogens.

Hydrogen sulfide may accumulate in the upper space of storage tanks containing Fuel Oil. Consequently, hydrogen sulfide may reach extremely hazardous concentrations. When filling tanks or tank cars, hydrogen sulphide together with hot Fuel Oil vapour may be emitted to the environment. Vapour and gas released from hot Fuel Oil may affect respiratory organs; therefore, use of appropriate personal protective equipment is necessary.

Formation of toxic compounds with other materials in water and air at ambient temperature is not characteristic to Fuel Oil. Hydrocarbons of Fuel Oil are harmful to land and aquatic life; may cause adverse long-term effects in the aquatic environment and soil.

3 COMPOSITION/ INFORMATION ON INGREDIENTS**Chemical composition:**

Fuel Oil.

Components according to Regulation (EC) No. 1272/2008:

| Description | CAS No. | EC No. | Identification Number | Concentration, % m/m |
|--|---------------------|-------------------------|-------------------------------|----------------------|
| Fuel Oil | 68476-33-5 | 270-675-6 | 649-024-00-9 | Up to 100 |
| Anti H ₂ S additive ASB 50 | 50-00-0, 67-56-1 | 200-001-8, 200-659-6 | 605-001-00-5, 603-001-00-X | 0 – 0,055 |

4 FIRST-AID MEASURES**General Information**

Hydrogen sulphide (H₂S) can accumulate in the headspace of product storage tanks and reach potentially hazardous concentrations

Inhalation

Symptoms: Irritation of the respiratory tract due to excess fumes, mists or vapour exposure.

If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

If casualty is unconscious and:

- Not breathing – ensure that there is no obstruction to breathing and give artificial respiration by trained personnel. If necessary, give external cardiac massage and obtain medical assistance.

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- Breathing – place in the recovery position. Administer oxygen if necessary.
Obtain medical assistance if breathing remains difficult.
If there is any suspicion of inhalation of H₂S:
- Rescuers must wear breathing apparatus, belt and safety rope, and follow rescue procedures.
Remove casualty to fresh air as quickly as possible.
- Immediately begin artificial respiration if breathing has ceased.
- Provision of oxygen may help.
- Provision of oxygen mask may help.
- Obtain medical advice for further treatment.

Skin Contact:
Symptoms: dry skin, irritation in case of repeated or prolonged exposure. May cause burn in case of contact with product at high temperature.
Immediately remove contaminated clothing and footwear and dispose of safely.
Wash affected area thoroughly with soap and water.
Never use gasoline, kerosene or other solvents for washing of contaminated skin.
Seek medical attention if skin irritation, swelling or redness occurs.
When using high-pressure equipment, injection of product can occur. If high-pressure injuries occur, immediately seek professional medical attention. Do not wait for symptoms to develop.
For minor thermal burns: Cool the burn. Hold the burned area under cold running water for at least five minutes, or until the pain subsides. However, body hypothermia must be avoided.
Do not put ice on the burn; Remove non-sticking garments carefully. DO NOT attempt to remove portions of clothing glued to burnt skin but cut round them.
Seek medical attention in all cases of serious burns.

Eye Contact
Symptoms: slight irritation (unspecific). May cause burn in case of contact with product at high temperature.
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist.
If hot product is splashed into the eye, it should be cooled immediately to dissipate heat, under cold running water. Immediately obtain specialist medical assessment and treatment for the casualty.

Ingestion / Aspiration
Except for deliberate acts, ingestion of large amounts is unlikely.
Symptoms: few or no symptoms are expected. If any, nausea and diarrhea might occur.
Do NOT induce vomiting. Ask for medical assistance.
Do not give anything by mouth to an unconscious person.

Information to doctor or other competent person providing first aid.
Treatment according to symptoms.

5 FIRE-FIGHTING MEASURES

Flammability

Flammable liquid.

Suitable Extinguishing Media

- Foam (specifically trained personnel only),
- Water fog (specifically trained personnel only),
- Dry chemical powder,

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- Carbon dioxide,
- Inert gases (subject to regulations),
- Sand or earth,
- Steam.

Unsuitable Extinguishing Media

Does not use direct water jets on the burning product; they could cause splattering and spread the fire.

Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

Combustion Products

Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide, hydrogen sulphide (H₂S), sulfur oxides (SO_x) or sulfuric acid and unidentified organic and inorganic compounds.

Specific Hazards

Spraying water jet onto product burning in tank cars or storage tanks is not recommended because the mixture of hot product and water may cause spontaneous boil, outbreak from tank and splash.

Tank cars and storage with product, which are in the direct vicinity of the fire, should be cooled by water jets from the safe distance.

Protective Equipment for Firefighters

In case of a large fire or in confined or poorly ventilated spaces wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 ACCIDENTAL RELEASE MEASURES

General Information

Depending on its temperature product may be liquid, semi-solid and solid. Stop or contain leak at the source if safe to do so. Avoid direct contact with released material. Stay upwind. In case of large spillages, alert residents in downwind areas.

Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Except in case of small spillages, the feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency.

It is recommended to eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares).

When the presence of dangerous amounts of H₂S around the spilled product is suspected or proved, additional or special actions may be warranted, including access restrictions, use of special protection equipment, procedures and personnel training.

If required, notify relevant authorities according to all applicable regulations.

Personal Protection Equipment

Small spillages: normal antistatic working clothes are usually adequate. Large spillages: full body suit of chemically resistant and antistatic material, if necessary heat resistant and insulated.

Work gloves providing adequate chemical resistance, specifically to aromatic hydrocarbons. If contact with hot product is possible or anticipated, gloves should be heat-resistant and thermally insulated.

NOTE: Gloves made of PVA are not water-resistant, and are not suitable for emergency use.

Work helmet. Antistatic non-skid safety shoes or boots, if necessary heat-resistant.

Goggles or face shield, if splashes or contact with eyes is possible or anticipated.

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Respiratory protection: a half or full-face respirator with filter(s) for organic vapours/H₂S or a Self Contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used.

Environmental Measures and Cleaning Methods

Spillages on to Land

Prevent product from entering sewers, rivers, waterways or other bodies of water.

If necessary, dike the product with dry earth, sand or similar non-combustible materials.

Let hot product cool down naturally .

Large spillages may be cautiously covered with foam, if available, to limit fire risk. Do not use direct jets.

When inside buildings or confined spaces, ensure adequate ventilation.

Absorb spilled product with suitable non-combustible materials.

Collect free product with suitable means. Collect recovered product and other contaminated materials in suitable containers for recycle, recovery or safe disposal.

In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Spillages on Water or at Sea

In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents.

If possible, large spillages in open waters should be contained with floating barriers or other mechanical means. If this is not possible, control the spreading of the spillage, and collect the product by skimming or other suitable means.

The use of dispersants should be advised by an expert, and, if required, approved by local authorities.

Collect recovered product and other contaminated materials in suitable containers for recycle, recovery or safe disposal.

Product which is denser than water will sink to the bottom, and usually no intervention will be feasible. If possible, collect the product and contaminated materials with mechanical means, and store/dispose of according to relevant regulations. In special situations (to be assessed on case-by case basis, according to expert judgment and local conditions), excavations of trenches on the bottom to collect the product, or burying the product with sand may be a feasible option.

Additional Information

NOTE: Recommended measures are based on the most likely spillage scenarios for this material; however, local conditions (wind, air temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions. For this reason, local experts should be consulted when necessary. Local regulations may also prescribe or limit actions to be taken.

Concentration of H₂S in tank headspaces may reach hazardous values, especially in case of prolonged storage. This situation is especially relevant for those operations which involve direct exposure to the vapours in the tank.

Spillages of limited amounts of products, especially in the open air when vapours will be usually quickly dispersed, are dynamic situations, which are unlikely to entail exposure to dangerous concentrations. As H₂S has a density greater than ambient air, a possible exception may regard the build-up of dangerous concentrations in specific spots, like trenches, depressions or confined spaces. In all these circumstances, however, the correct actions should be assessed on a case-by-case basis.

Spillages of hot product in confined spaces may be hazardous due to toxic gas and hydrocarbons, the concentration of which may reach hazardous limits.

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7 HANDLING AND STORAGE

General Information

Ensure that all relevant regulations regarding handling and storage facilities of flammable products are followed.

A specific assessment of inhalation risks from the presence of H₂S in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases must be made to help determine controls appropriate to local circumstances.

Keep away from heat/sparks/open flames/hot surfaces. No smoking.

Use and store only outdoors or in a well-ventilated area.

Avoid contact with the product.

Avoid release to the environment.

Handling

During product transfer activities (loading and unloading of mobile tanks) and during sampling there is a risk of static electrical discharge, therefore, precautionary measures against static electricity shall be taken.

For the product transportation hermetic mobile tank cars for flammable liquids should be used.

Ground/bond containers, tanks and transfer/receiving equipment.

The vapour is heavier than the air. Beware of accumulation in pits and confined spaces.

Avoid contact with skin. Precautions should be taken to avoid skin burns when handling hot product.

Use adequate personal protective equipment as required. Do not breathe fume/ mist/ vapours .

Storage

Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation. Store product only in tanks or containers designed for flammable liquids.

Storage installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills.

Cleaning, inspection and maintenance of internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations.

Before entering storage tanks and commencing any operation in a confined area check the atmosphere for oxygen content, hydrogen sulphide (H₂S) and flammability.

Store separately from oxidizing agents.

Recommended and Unsuitable Materials for Storage

Recommended materials: For containers (tanks), or container linings use mild steel, stainless steel.

Unsuitable materials: some synthetic materials may be unsuitable for containers (tanks) or container linings depending on the material specification and intended use. Compatibility should be checked with the manufacturer.

Container Advice If the Product is Supplied in Containers

Keep only in the original container (tank) or in a suitable container for this kind of product.

Keep containers (tanks) tightly closed and properly labeled.

Empty containers (tanks) may contain combustible product residues. Do not weld, solder, drill, cut or incinerate empty containers, unless they have been properly cleaned.

Application:

Fuel Oil is used as a liquid fuel for the production of heat and power.

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8 EXPOSURE CONTROL AND PERSONAL PROTECTION

Exposure Limits

National occupational exposure limits allowed should be observed. Where not established, the following short-term exposure limit is recommended:

- 300 mg/m³.

Technical Measures

At ambient temperature volatility of Fuel Oil is low and a little amount of vapour is generated. Exposure to vapour and gas must be minimized. Ensure good ventilation of workplaces.

Personal Protective Equipment:

Respiratory Protection

If operations are such that exposure to vapour and gas is unavoidable, then suitable approved respiratory protective equipment (e.g. acc.to EN 14387) should be worn. Approved self-contained or air supplying respiratory equipment should be used in places potential for hydrogen sulphide accumulation.

Eye Protection

Wear safety goggles in circumstances where eye contact may occur (e.g. acc. to EN 166).

Skin and Body Protection

Hand Protection

Wear petroleum product resistant gloves (e.g. acc. to EN 420, EN 388, EN 374-2, EN 374-3).

Other Protective Measures

It is necessary to wear protective clothes (e.g. acc. to EN 465) and other protection equipment. Heat resistant clothes and boots should be worn to avoid thermal burns when handling hot product. Cover your face, head and neck.

Special Hygienic Recommendations

Wash hands before breaks and after work.

Environmental Impact Control

To ensure the compliance of ventilation and process equipment with requirements of environmental legal acts, emissions of such equipment are subject to check ups. In some cases vapour filtering installations or process equipment modifications may be necessary for the reduction of emission to allowed limit.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance, colour, odour

Black viscous liquid, odour characteristic to hydrocarbons.

Important Safety Information

pH Insignificant information.

Flash point in a closed cup > 65 °C.

Self-ignition temperature 220 ÷ 550 °C.

Kinematic viscosity at 100 °C < 50 cSt.

Density at 15°C > 1000 kg/m³.

Vapour pressure 0,02 ÷ 0,79 kPa, at 120 °C.

Solubility in water water insoluble.

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10 STABILITY AND REACTIVITY

Stability

Stable at ambient temperature.

Conditions to Avoid

High ambient temperature.

Materials to Avoid

Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products

Overheating in storage may cause partial decomposition with vaporization of toxic hydrogen sulphide (H₂S) gas and generation of fumes, carbon dioxide and other harmful gases. Concentration of toxic gas in a confined space or premises may reach a hazardous limit.

11 TOXICOLOGICAL INFORMATION

Sources of Exposure

The substance may affect human body through skin, if inhaled and swallowed.

Acute Health Effects

Accidental cold product contact with eyes causes transient stinging and redness.

Hot product contact with eyes or skin causes thermal burns.

Fuel Oil is irritating to skin and causes dryness. Product vapour is irritating to eyes, nose and throat.

When hydrogen sulphide is present in vapour, may be toxic by inhalation.

Experimental acute toxicity data:

Acute oral LD₅₀ > 5000 mg/kg,

Acute inhalation LC₅₀ = 4,1 mg/l,

Acute dermal LD₅₀ > 2000 mg/kg.

Chronic Health Effects

Due to polycyclic aromatic hydrocarbons potentially contained in Fuel Oil, prolonged or repeated skin contact may eventually result in dermatitis and other irreversible skin disorders including cancer. The inhalation of vapour and gas containing polycyclic aromatic hydrocarbons over long periods may result in hazardous outcome and health disorders including lung cancer.

Experimental chronic toxicity data:

Sub-chronic repeat dose dermal NOAEL = 1,1 mg/kg.

Reproductive Toxicity: NOAEL = 1 mg/kg/day.

12 ECOLOGICAL INFORMATION

Ecotoxicity

Hydrocarbons of Fuel Oil are harmful to aquatic life; may cause long-term adverse effects in the aquatic environment. Spilled product pollutes environment and direct contact is harmful to fauna and flora. Product spills may form a film on water surfaces causing physical damage to aquatic organisms.

Experimental data:

Acute aquatic invertebrate EL₅₀ 2 mg/l

Acute aquatic algae ErL₅₀ 0,75 mg/l

Acute aquatic fish LL₅₀ 79 mg/l

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Long-term invertebrate NOEL₅₀ 0,27 mg/l
Long-term fish NOEL₅₀ 0,1 mg/l
Reproductive toxicity bird NOAEL 20 000 mg/kg diet

Durability and Degradability

Fuel Oil hydrocarbons are inherently biodegradable.

Bio-Accumulative Potential

Hydrocarbons of the product may accumulate in organic sediments of water.

Mobility

Depending on ambient temperatures, spillage may evaporate slowly from surface soil and water. Product may penetrate the soil causing contamination of ground water.

13 WASTE MANAGEMENT

Waste Disposal Methods

Waste is disposed by combustion or application of other de-harming methods in accordance with national requirements and local regulations or via a licensed waste disposal contractor. Identify the hazards of waste handling and undertake required safety measures. Personal protective equipment is necessary for waste managing personnel.

Empty Fuel Oil containers may contain some remaining product. Hazard warning labels should be present as a guide to the safe handling of empty containers and disposal of the remaining product.

14 TRANSPORT INFORMATION

UN number - 1202

Shipping name - Fuel Oil, Heavy Fuel Oil.

Shipping name from UN Model Regulations of Addendum No. 2 SMGS (ADR, RID)

- Heating oil, light *

Shipping name according to Order No. Į-907 of 21 November 2011 of General Director of AB Lietuvos Geležinkeliai of the Republic of Lithuania:

- Fuel oil, flash point max 100 °C

Land Transport

ADR

Hazard class - 3
Packaging group - III
Environmental hazard - environmentally hazardous

RID

Hazard class - 3
Packaging group - III
Environmental hazard - environmentally hazardous

Addendum No. 2 to SMGS

Hazard class - 3
Packing group - III
Emergency card No. - 315
Environment hazard - environmentally hazardous

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IMDG**Hazard class - 3
Packaging group - III

NOTE: * Shipping name according to Addendum No. 2 to SMGS (*the Agreement on International Goods Transport by Rail*) was ascribed following *Rules S/21 of Safety and Emergency Situations or Emergency Response for Rail Transportation of Hazardous Shipments* approved by Order No. Į-504 of 19 June 2009 of General Director of AB *Lietuvos Geležinkeliai* of the Republic of Lithuania.

15 REGULATORY INFORMATION**Legislation****Lithuanian:**

Commission Regulation (EU) No. 453/2010; Regulation (EC) No. 1272/2008 of the European Parliament and of the Council; Law on Chemical Substances and Preparations of the Republic of Lithuania (*Official Gazette (Valstybės Žinios)*, 2000, No. 36-987; 2004, No. 116-4329; 2005, No. 79-2846; 2006, No. 65-2381; 2008, No. 76-3000); Order No. 532 /742 „Regarding Procedure of Classification and Labeling of Hazardous Chemicals and Preparations“ issued by the Minister of Environment and Minister of Health Care of the Republic of Lithuania on 19 December 2000 (*Official Gazette*, 2001, No. 16-509; 2002, No. 81-3501; 2003, No. 81(1)-3703, No. 81(2)-3703, No. 81(3)-3703; 2005, No. 115-4196, No. 141-5095; 2008, No. 66-2517); Law of the Republic of Lithuania on Packing and Packing Wastes Management (*Official Gazette*, 2001, No. 85-2968; 2005, No.86-3206; 2008, No.71-2699); Lithuanian Hygienic Norm HN 23:2007 „Concentration Limit Values of Hazardous Chemicals in Working Environment Air. General Requirements“ (*Official Gazette*, 2007, Nr.108-4434) approved by Order No. V-827/A1-287 of the Minister of Health Care and the Minister of Social Security and Labor of the Republic of Lithuania on 15 October 2007; *Rules S/21 of Safety and Emergency Situations or Emergency Response for Rail Transportation of Hazardous Shipments* approved by Order of General Director of AB *Lietuvos Geležinkeliai*.

Chemical Safety Assessment

Fuel Oil chemical safety assessment has been conducted.

16 OTHER INFORMATION

The Material Safety Data Sheet has been reviewed and the data therein were revised and laid out according the requirements of the Commission Regulation (EU) No. 453/2010 and *Rules S/21 of Safety and Emergency Situations or Emergency Response for Rail Transportation of Hazardous Shipments* approved by General Director of AB *Lietuvos Geležinkeliai* of the Republic of Lithuania.

Hazard statements:

H332: Harmful if inhaled.

H350: May cause cancer.

H361: Suspected of damaging fertility or the unborn child.

H373: May cause damage to organs.

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

Precautionary statements:

P201: Obtain special instructions before use.

P260: Do not breathe dust/fume/gas/mist/vapours/spray.

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P273: Avoid release to the environment.
P281: Use personal protective equipment as required.
P308+P313: If exposed or concerned: Get medical advice/attention.
P501: Dispose of contents/container to ...

Additional labeling requirements (EUH)

EUH066: Repeated exposure may cause skin dryness or cracking.

Risk Phrases According to Council Directive 67/548/EEC:

R20 Harmful if inhaled.
R45 May cause cancer.
R48/21 Harmful, prolonged repeated contact with skin cause serious damage to health.
R63 Possible risk of harm to the unborn child.
R66 Repeated exposure may cause skin dryness and cracking.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Do not use Fuel Oil for purposes other than indicated in the manufacturer's information. During such use the user may be exposed to unforeseen hazards.

Should you have any questions or doubts regarding the MSDS, its contents or other issues related to the material safety, please contact us at the address: info@orlenlietuva.lt

NOTE: Information provided herein is considered to be accurate as of the date specified below. No warranty is made as to the accuracy or completeness of the data and information provided in this data sheet. Information provided herein serves only as guidelines for safe work, use, processing, storage, and waste management. It cannot be considered as a warranty or quality certificate. This information applies only to specific material designated and may not be suitable for such material used in combination with any other materials or in any other manner not described in this document.

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