

SAFETY DATA SHEET

SECTION 1: IDENTIFICATION

1.1 Product Identifier

Product Name	Fuel Oil, residual
Chemical name	VERY LOW SULPHUR FUEL OIL
Trade Name	Very low sulphur fuel oil
Product type	VLSFO
CAS No.	68476-33-5

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified Use(s)	Use only as a Fuel Fuel for industrial, marine, and commercial boilers and furnaces; fuel for other combustion equipment.
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The product should not be used for purposes other than those shown above without first referring to the supplier and obtaining written handling instructions.

1.3 Details of the supplier of the safety data sheet

Company Identification	Monjasa AS Strevelinsvej 34 7000 Fredericia Denmark
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1.4 Emergency telephone number: the details below are available 24/7

Country	Emergency Contact Number	Email
Angola	+244 222002243	angola@monjasa.com
Cyprus	+357 25 123 200	cyprus@monjasa.com
Denmark	+45 70 260 230	denmark@monjasa.com
Dubai	+971 4 420 8600	dubai@monjasa.com
Namibia	+264 64 201 2180	namibia@monjasa.com
Panama	+507 2 025 231	americas@monjasa.com
Singapore	+65 3163 4000	singapore@monjasa.com
Stamford	+1 203 276 6300	americas@monjasa.com
Vietnam	+84 28 6287 5952	vietnam@monjasa.com

SECTION 2: HAZARD IDENTIFICATION

2.1 Classification of the substance or mixture

Regulation (EC) No. 1272/2008 (CLP)

Asp. Tox. 1: H304
Acute Tox. 4; H332
Carc. 1B; H350
Repr. 2; H361d
STOT RE 2; H373 (Thymus, Liver, blood effects)
Aquatic Acute 1; H400
Aquatic Chronic 1; H410

2.2 Label elements

Signal Word(s)	Danger
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Hazard Pictogram (s)



Hazard Statement(s)

May be fatal if swallowed and enters airways.
 Harmful if inhaled.
 May cause cancer.
 Suspected of damaging the unborn child.
 May cause damage to organs through prolonged or repeated exposure: Thymus, Liver, blood effects
 Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s)

Obtain special instructions before use.
 Do not breathe dust/fume/gas/mist/vapours/spray.
 Use personal protective equipment as required.
 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
 DO NOT induce vomiting.
 Avoid release to the environment

Supplemental information

Repeated exposure may cause skin dryness or cracking.

2.3 Other hazards

Product may release Hydrogen Sulphide: A specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and wastewater, and unintentional releases should be made to help determine controls appropriate to local circumstances. Remove contaminated clothing and wash clothing before reuse. Vapour may create explosive atmosphere. The vapour is heavier than air; beware of pits and confined spaces.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Components	CAS No.	EC No.	Range in %
Fuel oil, residual	68476-33-5	270-675-6	100

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Self-protection of the first aider

The vapour is heavier than air, beware of pits and confined spaces. If it is suspected that fumes are still present, the responder should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation, Avoid all contact. Do not ingest. If swallowed, then seek immediate medical assistance.

H2S Warning

Hydrogen sulphide (H₂S) can accumulate in the headspace of storage tanks and reach potentially hazardous concentrations.
 If there is any suspicion of inhalation: A self-contained breathing apparatus should be worn. Remove to fresh air immediately.

Skin Contact

IF ON SKIN (or hair): Remove contaminated clothing immediately and drench affected skin with plenty of water, then wash with soap and

water. If irritation (redness, rash, blistering, develops) get medical attention

Eye Contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Inhalation IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Maintain an open airway. loosen tight clothing such as a collar, tie, belt or waistband. If symptoms persist, obtain medical attention.

Ingestion IF SWALLOWED: Do not induce vomiting because of risk of aspiration into the lungs. If vomiting occurs spontaneously, keep head below hips to prevent aspiration into the lungs. If unconscious, place in recovery position and get medical attention immediately. Do not give anything by mouth to an unconscious person. Get medical attention immediately. Do not wait for symptoms to appear.

4.2 Most important symptoms and effects, both acute and delayed
 Inhalation: Vapour may be irritant to the respiratory tract.
 Skin Contact: Repeated and/or prolonged skin contact may cause irritation.
 Eye Contact: May cause eye irritation.
 Ingestion: Aspiration hazard. Aspiration into the lungs may cause chemical pneumonitis, which can be fatal.

4.3 Indication of any immediate medical attention and special treatment If breathing is laboured, oxygen should be administered by qualified personnel. In case of accident or if you feel unwell, seek medical needed advice immediately (show the label where possible).

Notes to a physician:
 IF INHALED: If unconscious, place in recovery position and get medical attention immediately. Administer oxygen if available and artificial respiration if necessary.
 IF SWALLOWED: Do not induce vomiting because of risk of aspiration into the lungs. If aspiration is suspected obtain immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration into the lungs.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media Appropriate: Foam, Carbon dioxide, Water fog or dry powder
 Inappropriate: Do not use water jet. Direct water jet may spread the fire.

5.2 Special hazards arising from the substance or mixture Not flammable but will support combustion. The vapour is heavier than air; beware of pits and confined spaces. Will float and can be reignited on surface water. Decomposes in a fire giving off toxic fumes. A mixture of solid and liquid particles and gases including unidentified organic and inorganic compounds. If Sulphur compounds are present in appreciable amounts, combustion products may include also H₂S and Sox (sulfur oxides) or sulfuric acid.

5.3 Advice for fire-fighters Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid release to the environment. Dike fire control water for later disposal.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions	Caution – spillages may be slippery. Ensure operatives are trained to minimize exposures. Ensure suitable personal protection during removal of spillages. Eliminate sources of ignition. Shut off leaks if without risk. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid all contact with substance. Ensure adequate ventilation. Do not breathe vapour. Do not ingest if swallowed then seek immediate medical assistance. Do not use sparking tools.
H2S Warning	Product may release Hydrogen Sulphide. Exposure controls – These controls may include: Segregation of areas, Access only to authorized persons, Permit to work systems, Confined space working procedures, Area H2S alarms, Personal H2S alarms, Personal escape sets, H2S awareness training. Please see section 8 for appropriate personal protection equipment.
Small spillages	Wear flame-resistant antistatic protective clothing.
Large spillages	Evacuate the area and keep personnel upwind. Drench contaminated clothing with water before removing to avoid of sparks from static electricity. Avoid all contact. Wear chemical protection suit and breathing apparatus. See also Section 8.
6.2 Environmental precautions	Avoid release to the environment. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body. If necessary; Dike area to contain the spill and prevent releases to sewers, drains, or other waterways.
6.3 Methods and material for containment and cleaning up	Provided it is safe to do so, isolate the source of the leak. The Vapour is heavier than air; beware of pits and confined spaces. Ensure that the equipment is adequately grounded. Allow small spillages to evaporate provided there is adequate ventilation.
Spillages onto land	<p>In case of soil contamination, remove contaminated soil and treat in accordance with local regulations. Absorb spillages onto sand, earth or any suitable absorbent material. Transfer to a lidded container for disposal or recovery. Dispose of this material and its container as hazardous waste.</p> <p>Small spillages: Allow small pillages to evaporate provided there is adequate ventilation. Wear flame-resistant antistatic protective clothing.</p> <p>Large spillages: Cover spillage with foam to reduce evaporation. Do not use water jet.</p>
Spillages on water or at sea	<p>Collect as much as possible in clean container for reuse or disposal.</p> <p>Small spillages: Contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents.</p> <p>Large spillages: Open waters should be contained with floating barriers or other mechanical means and recovered, only if this is strictly necessary and if fire/explosion risks can be adequately prevented. Otherwise control the spreading of the spillage, and let the substance evaporate naturally.</p>

6.4 Reference to other sections

For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet., Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet.

Local authorities should be advised if significant spillages cannot be contained.

Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Obtain special instructions before use. Keep away from sources of Ignition – No smoking. Use only outdoors or in a well-ventilated area. Prevent vapour build up by providing adequate ventilation during and after use. Take action to prevent static discharges. Use non-sparking tools. All parts of the plant and equipment should be electrically bonded together and connected to earth. Electrical continuity should be checked at regular intervals. Antistatic clothing and footwear should be used. The vapour is heavier than air; beware of pits and confined spaces. Avoid all contact with substance. Do not ingest. If swallowed, then seek immediate medical assistance. Do not breathe vapour. See Section: 8. Keep good industrial hygiene. Wash hands thoroughly after handling. Contaminated clothing should be thoroughly cleaned.

H2S Warning

Product may release Hydrogen Sulphide: A specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances. These controls may include: Segregation of areas, Access only to authorized persons, Permit to work systems, Confined space working procedures, Area H2S alarms, Personal H2S alarms, Personal escape sets, H2S awareness training.

7.2 Storage

Light hydrocarbon vapours can build up in the headspace of containers. These can cause flammability / explosion hazards. Bund storage facilities to prevent soil and water pollution in the event of spillage. Keep only in original packaging. Keep containers properly sealed when not in use. Protect from sunlight. Containers of this material may be hazardous when empty since they retain product residue. Empty container may contain product residue which may result in flammable or explosive vapours inside the container.

Storage temperature

Stable at ambient temperatures.

Incompatible materials

Keep away from oxidizing agents.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Engineering controls

Provide adequate ventilation, including appropriate local extraction if dusts, fumes or vapours are likely to be evolved. Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources. Guarantee that the eye flushing systems and safety showers are located close to the working place.

8.2 Personal Protection

Protective clothing should be selected specifically for the working such place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier. Fuels are typically used, transferred and transported in closed systems. If exposure is likely (i.e. during sampling) the following advice may be appropriate. Keep good industrial hygiene. Always wash hands before smoking, eating and drinking. Do not eat, drink or smoke at the workplace.

Eye/ face protection



Avoid eye contact. The wearing of chemicals safety goggles, or face shield is recommended to protect against liquid splashes.

Skin protection



Hand protection: Wear impervious gloves. Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer. Recommended: Nitrile rubber.

Respiratory protection



Body protection: Wear anti-static clothing and shoes.

small scale: Wear suitable coveralls to prevent exposure to the skin.

large scale: Chemical protection suit.

If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable.

No special requirements under ordinary conditions of use and with adequate ventilation in closed systems.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

When the product is heated /In case of inadequate ventilation wear respiratory protection.

8.3 Environmental exposure controls

Avoid release to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Basic physical and chemical properties

Melting point/freezing point	< 30 °C
Initial boiling point and boiling range	> 350 °C
Flash point	> 60 °C
Evaporation rate	Not established.
Flammability (solid, gas)	Not applicable – Liquid.
Vapour pressure	0.5 kPa @ 20°C
Vapour density	>1 (Air=1)
Relative density	0.80 - 0.99 g/cm ³ @ 15 °C
Solubility(ies)	Water: 0.4 mg/l @ 22 °C Slightly soluble.
Partition coefficient: n-octanol/water	2.7 – 6 log P
Auto-ignition temperature	> 225 °C

Decomposition Temperature	Not established.
Viscosity	7 – 20.5 mm ² /s @ 40 °C (<60 mm ² /s @ 100 °C)
Appearance	Liquid, Viscous, May be coloured.
Odour	Fuel oil-like
Explosive properties	Not explosive. (Vapour may create explosive atmosphere.)
Oxidizing properties	Not oxidizing.

SECTION 10: STABILITY AND REACTIVITY

10.1	Stability	Stable under normal conditions. Hazardous polymerization will not occur. Product may release Hydrogen Sulphide.
10.2	Reactivity	Reacts with - Strong oxidizing agents
10.3	Possibility of hazardous reactions	Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. Product may release Hydrogen Sulphide.
10.4	Conditions to avoid	Elevated temperature: > 50 °C Keep away from heat, sources of ignition and direct sunlight.
10.5	Incompatible materials	Keep away from oxidizing agents. Strong Acids and Alkalis.
10.6	Hazardous decomposition product(s)	A mixture of solid and liquid particulates and gases including unidentified organic and inorganic compounds. Decomposes in a fire giving off toxic fumes: CO _x , H ₂ S, SO _x ,

SECTION 11: TOXICOLOGICAL INFORMATION

11.1	Information on toxicological effects	Occupational exposure to the substance or mixture may cause adverse effects.
	Skin Contact	Causes skin irritation. Repeated exposure may cause skin dryness or cracking. May be absorbed through the skin.
	Eye Contact	Direct contact with eyes may cause temporary irritation.
	Inhalation	Harmful if inhaled. May cause damage to organs through prolonged or repeated exposure by inhalation. Breathing of high concentrations may cause dizziness, light-headedness, headache, nausea and loss of co-ordination. Continued inhalation may result in unconsciousness.
	Ingestion	Ingestion may cause irritation and malaise. Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.
11.2	Toxicity Data	
	Acute	May be fatal if swallowed and enters airways. Harmful if inhaled. Breathing of high concentrations may cause dizziness, light-headedness, headache, nausea and loss of co-ordination. Continued inhalation may result in unconsciousness. May irritate and cause stomach pain, vomiting, diarrhoea and nausea. Hydrogen sulfide, a highly toxic gas may be present. Signs and symptoms of overexposure to hydrogen sulfide include respiratory and eye irritation, dizziness, nausea, coughing, a sensation of dryness and pain in the nose, and loss of consciousness. Odor does not provide a reliable indicator of the presence of hazardous levels of gas in the atmosphere.
	Chronic	Prolonged exposure may cause chronic effects.

Suspected of causing cancer

SECTION 12: ECOLOGICAL INFORMATION

- 12.1 Toxicity** Aquatic Acute 1; Very toxic to aquatic life.
Aquatic Chronic 1; Very toxic to aquatic life with long lasting effects.
This product is expected to be resistant to biodegradation and to persist in the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

- 13.1 Waste disposal** Do not empty into drains, dispose of this material and its container at Hazardous or special waste collection point. Disposal should be in accordance with local, state or national legislation. Containers of this material may be hazardous when empty since they retain product residue. Containers must not be punctured or destroyed by burning, even when empty. Contact local environmental or health authorities for approved disposal of this material.

SECTION 14: TRANSPORT INFORMATION

- 14.1 UN Number** UN 3082
- 14.2 Proper Shipping Name** Fuel Oil Residual

SECTION 15: REGULATORY INFORMATION

For current health and safety information on marine fuels, contact any Sales Representative in the country where the bunker purchase took place.

SECTION 16: OTHER INFORMATION

SOURCE OF KEY DATA:

The recommendations presented in this Safety Data Sheet were compiled from actual test data (when available), comparison with similar products, component information from suppliers and from recognized codes of good practice.

-----NOTE-----

The information and recommendations contained herein are, to the best of knowledge and belief, accurate and reliable as of the date issued, but are offered without guarantee or warranty, express or implied. They relate to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Conditions of use of the material are under the control of the user; therefore, it is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use.

Health and safety precautions and environmental advice noted in this safety data sheet may not be accurate for all individuals and/or situations.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations.

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