



SAFETY DATA SHEET

KALYAK

According to Regulation (EU) No 2015/830

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

| | |
|---------------|--------------------|
| Product name | KALYAK |
| Chemical name | Fuel oil, residual |
| CAS No | 68476-33-5 |
| EC No | 270-675-6 |

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

| | |
|----------------------|---|
| Identified uses | Used in heating boilers at homes, used as boiler and oven fuel in industry. |
| Uses advised against | No data available. |

1.3. Details of the supplier of the safety data sheet

| | |
|----------|---|
| Supplier | Akpet Akaryakıt Dağıtım A.Ş. Akatlar Mahallesi, Ebululla Mardin Caddesi No: 22 Maya Park Tower I, 34335 Beşiktaş / İstanbul / Turkey Tel: +90 212 376 66 00 www.lukoil.com.tr e-mail: info@lukoil.com.tr |
|----------|---|

| | |
|----------------|-------------|
| Contact Person | HSE Manager |
|----------------|-------------|

1.4. Emergency telephone number

LUKOIL: +90 444 45 85 (7/24)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

| | |
|-------------------------------|--|
| Physical and Chemical Hazards | Not classified. |
| Human health | Carc. 1B - H350 |
| Environment | Aquatic Acute 1 - H400; Aquatic Chronic 1 - H410 |

2.2. Label elements

Label In Accordance With (EC) No. 1272/2008

CAS No: 68476-33-5



Signal Word

Danger



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Hazard Statements

H350 May cause cancer.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P243 Take precautionary measures against static discharge.
P273 Avoid release to the environment.
P280 Wear protective clothing and gloves.
P314 Get medical advice/attention if you feel unwell.
P501 Dispose of contents/container in accordance with national regulations.

Supplemental label information

EUH066 Repeated exposure may cause skin dryness or cracking.
RCH002 Restricted to professional users.

2.3. Other hazards

This material can contain hydrogen sulphide (H₂S), a very toxic and extremely flammable gas. Vapours containing hydrogen sulphide may accumulate during storage or transport and may also be vented during filling of tanks. Hydrogen sulphide has a typical "bad egg" smell but at high concentrations the sense of smell is rapidly lost, therefore do not rely on sense of smell for detecting hydrogen sulphide..

May cause damage to aquatic organisms. Spillages prevent the transfer of oxygen by forming a film layer on the water surface.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

| Name | EC No. | CAS No. | Content | Classification (EC 1272/2008) |
|--------------------|-----------|------------|---------|---|
| Fuel oil, residual | 270-675-6 | 68476-33-5 | 100% | Carc. 1B - H350 Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410 EUH066 |

The Full Text for all hazard statements are displayed in section 16.

Composition Comments

The data shown are in accordance with the latest EC Directives.

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General information

General first aid, rest, warmth and fresh air. Get medical attention if any discomfort continues.

Inhalation

Move into fresh air and keep at rest. Rinse nose and mouth with water. If necessary, should be applied artificial respiration and heart massage. If there should be given oxygen. Get medical attention if any discomfort continues.

H₂S effect: People affected by H₂S should be removed to fresh air and medical precautions should be taken without delay. If affected person is unconscious he/she should be laid on his/ her back, should be given artificial respiration, heart massage and oxygen and taken to a doctor.

Ingestion

Immediately rinse mouth. Keep person under observation. Do not induce vomiting.
If vomiting occurs, keep head low. Transport immediately to hospital and bring along these instructions.



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Skin contact

Immediately remove contaminated clothing. Wash off promptly and flush contaminated skin with water.

Promptly remove clothing if soaked through and flush skin with water.

Large quantities: Remove contaminated clothing. Flush skin thoroughly with water. Get medical attention if any discomfort continues.

Eye contact

Make sure to remove any contact lenses from the eyes before rinsing.

Promptly wash eyes with plenty of water while lifting the eye lids. Get medical attention promptly if symptoms occur after washing.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation : Headache, dizziness, and nausea.

Ingestion : Nausea, vomiting, diarrhea.

Skin contact : Redness, dryness, cracks.

Eye contact : Eye irritation, redness, lacrimation.

4.3. Indication of any immediate medical attention and special treatment needed

Treat Symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Extinguishing media

Use: Foam. Carbon dioxide (CO₂). Dry chemicals, sand, earth, water mist.

Unsuitable extinguishing media DO NOT use water jet.

5.2. Special hazards arising from the substance or mixture

Unusual Fire & Explosion Hazards

Vapours may form explosive mixtures with air.

Vapor is heavier than air so that it can leaking to sewer system and may reach to further ignition sources.

Specific hazards

Result of thermal decomposition may occur fume, carbon oxides and organic compounds with low molecular weight compounds which are not yet considered. Sulfur oxides (SO_x). Hydrogen Sulphide (H₂S)

5.3. Advice for firefighters

Special Fire Fighting Procedures

Dike and collect extinguishing water.

Keep away all non-emergency personnel from fire area.

Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Fires in enclosed places should be extinguished by trained personnel wearing protective clothing and an oxygen mask.

Protective equipment for fire-fighters

Self contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Wear protective clothing as described in Section 8 of this safety data sheet.

Do not smoke, use open fire or other sources of ignition (cigarette, portable electrical devices such as battery-operated flashlight, radio, mobile phone). Immediately shut the devices in the environment which can cause sparkles.

Provide adequate ventilation. In case of spills, beware of slippery floors and surfaces.

Immediately ventilate the area by opening doors and windows when Kalyak leak is defined in the enclosed environment. Shut off the diesel flow by closing Kalyak tanks, hood or valves. Continue ventilation until the diesel smell is removed in the environment. Leak may be prevented from spreading by spraying water with fog nozzle and shielding according to the direction of the wind.



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6.2. Environmental precautions

Barrier should be used to prevent the spread when poured into water and product should be recollected on the water surface. Please contact with experts in case of spillage.

6.3. Methods and material for containment and cleaning up

Eliminate all ignition sources. Stop leak if without risk. May be in liquid, semi solid and solid forms depending on its temperature. Large spills must remain in foam cover until danger is over. Use a non-combustible material such as vermiculite, sand or earth to absorb the product and place into a container for later disposal. Wash the area with soap and water. Spills and contaminated materials are collected from the work area as soon as possible and placed into a suitable container and ingredients are indicated on the container. Must be treated by trained personnel using oxygen mask due to H₂S can be spread from spilled hot liquid in closed area.

6.4. Reference to other sections

For personal protection, see section 8.
See section 11 for additional information on health hazards.
For waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Avoid contact with eyes and skin. Use appropriate goggles and gloves. Keep away from heat, sparks and open flame. During application and drying, solvent vapours will be emitted. Do not eat, drink or smoke when using the product. If it is suspected of sulphur compounds found in product, check the atmosphere for the amount of H₂S.

7.2. Conditions for safe storage, including any incompatibilities

Store in tightly closed original container in a dry, cool and well-ventilated place. Keep away from food, drink and animal feeding stuffs. Protect against physical damage and/or friction. Protect from heat, sparks and flame. Keep in a cool, well ventilated area. Store away from incompatible materials. It should be stored in tanks designing according to the product. Storage tanks should be labeled and should be kept closed when out of use. Do not remove the warning signs since some products may be present in empty tanks. Despite the possibility of the empty tanks containing product vapor should not be done cutting, welding, soldering processes. If the concentration of hydrocarbon vapor is more than 1%, oxygen concentration is less than 20% in the tank should not be entered without oxygen mask. There is possibility of ignition vapour of product are collected in the storage tanks. Therefore, static electricity must be discharged. Measures should be taken against the igniton source while filling and discharge. Equipments such as pumps etc. must be earthed or transmission cables must be connected each other by a cable to avoid accumulation of static electricity.

7.3. Specific end use(s)

The identified uses for this product are detailed in Section 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

| Name | STD | TWA - 8 Hrs | | STEL - 15 Min | | Notes |
|--------------------|-------|-------------|-----------------------|---------------|----------------------|-------|
| Fuel oil, residual | ACGIH | 10 ppm | 0.2 mg/m ³ | 15 ppm | | |
| Hydrogen Sulphide | OEL | 5 ppm | 7 mg/m ³ | 10 ppm | 14 mg/m ³ | |

ACGIH : American Conference of Industrial Hygienists

OEL : Occupational Exposure Limit.



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DNELs (Derived No Effect Level)

| Name | Type | Exposure | Value | Population | Effects |
|--------------------|------|----------------------------------|------------------------|------------|----------|
| Fuel oil, residual | DNEL | Short-term (15 min) - inhalation | 4700 mg/m ³ | Workers | Systemic |
| | | Long-term (8 hours) -dermal | 0.065 mg/kg bw/day | Workers | Systemic |
| | | Long-term (8 hours) - inhalation | 0.12 mg/m ³ | Workers | Systemic |
| | | Long-term (24 hours)- oral | 0.015 mg/kg bw/day | Consumers | Systemic |

8.2. Exposure controls

Protective equipment



Process conditions

Provide eyewash, quick drench.

Engineering measures

Provide adequate ventilation, including appropriate local extraction, to ensure that the defined occupational exposure limit is not exceeded.

Respiratory equipment

Appropriate respiratory equipment should be used when the possibility of exposure to hydrocarbon vapor.
Use oxygen mask to protect from H₂S.

Hand protection

For prolonged or repeated skin contact use suitable protective gloves.

Eye protection

Wear approved safety goggles.

The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material.

Hygiene measures

Promptly remove non-impervious clothing that becomes contaminated. When using do not eat, drink or smoke.
Wash hands after contact. Wash promptly if skin becomes contaminated.

Skin protection

Protective clothing should be worn. Anti-static and flame-retardant protective clothing is recommended to wear.

Environmental Exposure Controls

Please act in accordance with local and national laws.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

| Identifier | Unit | Value | Test method |
|----------------|-------------------|-------------------|-------------|
| Appearance | | Liquid | |
| Colour | | Black | |
| Odour | | Hydrocarbon Odor. | |
| Density, 15 °C | kg/m ³ | Max.950 | |



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| | | | |
|--|----------|-----------|---------------------|
| Flash Point | °C | >66 | TS EN ISO 2719 |
| Auto-ignition temperature | °C | 250 - 537 | |
| Melting point / freezing point | °C | <30°C | |
| Flammability or explosive limits - lower | % | 0.5 | |
| Flammability or explosive limits - upper | % | 5 | |
| Viscosity (@100°C) | cSt | Max.10 | TS 1451 EN ISO 3104 |
| Sulfur | % weight | 0.1 - 1.0 | TS EN ISO 8754 |

9.2. Other information

No information required.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

There are no known reactivity hazards associated with this product.

10.2. Chemical stability

Stable under normal temperature conditions and recommended use.
Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions

Will not polymerise.

10.4. Conditions to avoid

Should be kept away from sources of ignition.

10.5. Incompatible materials

Avoid contact with strong reducing agent (oxidizing).

10.6. Hazardous decomposition products

Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.
Thermal decomposition productions varies depending on conditions. If storage tank heats up, increase H₂S gas.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Skin Irritation/Corrosion

| Name | Test | Test number | Species | Exposure | Result | Remarks |
|--------------------|------|-------------|---------|----------|-----------------------|-------------------------|
| Fuel oil, residual | AB | B.4 | Rabbit | Skin | Non-irritant to skin. | Based on Heavy fuel oil |

Serious eye damage / irritation

| Name | Test | Test number | Species | Exposure | Result | Remarks |
|--------------------|------|-------------|---------|----------|-----------------------|-------------------------|
| Fuel oil, residual | AB | B.5 | Rabbit | Eyes | Non-irritant to eyes. | Based on Heavy fuel oil |



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Skin and respiratory sensitivity

| Name | Test | Test number | Species | Exposure | Result | Remarks |
|--------------------|------|-------------|------------|----------|-----------------|-------------------------|
| Fuel oil, residual | AB | B.6 | Guinea pig | Skin | Not sensitising | Based on Heavy fuel oil |

Germ cell mutagenicity:

| Name | Test | Cell | Experiment | Type | Result | Remarks |
|--------------------|------------------------|------|------------|--------------------------------|----------|---|
| Fuel oil, residual | Equivalent to OECD 476 | -- | In vitro | Subject: Mammal - species | Positive | Based on Catalytic cracked clarified oil (CCCO) |
| | Equivalent to OECD 471 | -- | In vitro | Subject: Non-mammalian species | Positive | Based on Catalytic cracked clarified oil (CCCO) |
| | Equivalent to OECD 475 | Germ | In vivo | Subject: Unspecified | Negative | Based on Catalytic cracked clarified oil (CCCO) |
| | Equivalent to OECD 474 | Germ | In vivo | Subject: Unspecified | Negative | Based on Catalytic cracked clarified oil (CCCO) |

Carcinogenicity:

| Name | Test | Species | Route | Exposure | Result | Remarks |
|--------------------|------------------------|---------|--------|----------|----------|---|
| Fuel oil, residual | Equivalent to OECD 451 | Mouse | Dermal | Lifetime | Positive | Based on Catalytic cracked clarified oil (CCCO) |

Reproductive Toxicity – Fertility/ Development

| Name | Test | Species | Route | Exposure | Developmental | Fertility | Remarks |
|--------------------|------|---------|--------|-----------------------------|---------------|-----------|---|
| Fuel oil, residual | EPA | Rat | Dermal | 70 days no effects observed | --- | Negative | Based on Catalytic cracked clarified oil (CCCO) |
| | EPA | Rat | Dermal | 20 days Effects observed | Positive | --- | Based on atmospheric residue |

Specific target organ toxicity - single exposure:

| Name | Test | Species | Route | Type | Dose | Exposure | Target organs | Remarks |
|--------------------|--------------------|---------|------------|-------|---------------|----------|---------------|---|
| Fuel oil, residual | Equivalent to OECD | Rat | Oral | LOAEL | >2000 mg/kg | | | Based on Catalytic cracked clarified oil (CCCO) |
| | EPA | Rat | Inhalation | LOAEL | 10 to 20 mg/l | 4 hours | | |
| | OECD | Rabbit | Dermal | LOAEL | >2000 mg/kg | 90 days | liver blood | |

Specific target organ toxicity - repeated exposure:

| Name | Test | Species | Route | Type | Dose | Exposure | Target organs | Remarks |
|--------------------|-------------------|---------|--------|-------|-----------------|----------|---------------|---|
| Fuel oil, residual | Equivalent to EPA | Rat | Dermal | LOAEL | 20 to 200 mg/kg | 90 days | liver blood | Based on Catalytic cracked clarified oil (CCCO) |



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Inhalation

In high concentrations, vapours may irritate throat and respiratory system and cause coughing.
In case of mist or vapour inhalation, eyes, nose and throat are irritated. Inhalation is dangerous due to H₂S and PCA.

Ingestion

It is harmful if swallowed in small doses. If swallowed a greater amount causes nausea and diarrhea. If exceed to lungs damages during vomiting.

Skin contact

If skin contact with hot product forms skin burn. Prolonged or repeated contact can cause skin diseases and skin cancer due to containing Polycyclic Aromatic Hydrocarbons.

Eye contact

May cause temporary eye irritation. Visual disturbances including blurred vision.
In case of accidentally eye contact causes temporary blindness.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Spillages prevent the transfer of oxygen by forming a film layer on the water surface.

| Name | Test | Species | Type | Exposure | Effects | Remarks |
|--------------------|---------------|---------|---|----------|--------------|----------------------------|
| Fuel oil, residual | OECD 202 | Daphnia | Acute EL50 2 mg/l Nominal Fresh water | 48 hours | Mobility | Based on Heavy fuel oil |
| | OECD 203 | Fish | Acute LL50 79 mg/l Nominal Fresh water | 96 hours | --- | Based on residual fuel oil |
| | Modelled data | Daphnia | Chronic NOEL 0.27 mg/l Nominal Fresh water | 21 days | Reproduction | ----- |
| | Modelled data | Fish | Chronic NOEL 0.1 mg/l Nominal Fresh water | 28 days | Mortality | ----- |

12.2. Persistence and degradability

This product is soluble in the soil without harming the environment.
Volatile components in the product have the photochemical ozone formation potential.

12.3. Bioaccumulative potential

Accumulates in soil.

12.4. Mobility in soil

Not available.

12.5. Results of PBT and vPvB assessment

Not available.

12.6. Other adverse effects

Very toxic to aquatic life with long lasting effects.

SECTION 13: DISPOSAL CONSIDERATIONS

General information

Disposed of as hazardous waste. Waste must be treated as the product itself.

13.1. Waste treatment methods

Empty containers, dispose of waste and residues in accordance with legislation of the local authority.
Environmental manager must be informed of all major spillages.



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Make sure containers are empty before discarding. Empty containers must not be burned because of explosion hazard. Please recycle empty pack in accordance with legislation of the local authority. Do not re-use empty containers. Some products may remain in empty containers. Do not perform heat treatment without erased or removed danger signs or labels from empty containers.

European waste catalogue (EWC)
13 07 01* fuel oil and diesel

SECTION 14: TRANSPORT INFORMATION

14.1. UN number

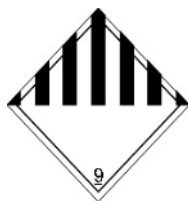
| | |
|----------------------|------|
| UN No. (ADR/RID/ADN) | 3082 |
| UN No. (IMDG) | 3082 |
| UN No. (ICAO) | 3082 |

14.2. UN proper shipping name

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuel oil, residual)

14.3. Transport hazard class(es)

| | |
|---------------------|---|
| ADR/RID/ADN Class | 9 |
| ADR/RID/ADN Class | Class 9: Miscellaneous dangerous substances and articles. |
| ADR Label No. | 9 |
| IMDG Class | 9 |
| ICAO Class/Division | 9 |
| Transport Labels | |



14.4. Packing group

| | |
|---------------------------|-----|
| ADR/RID/ADN Packing group | III |
| IMDG Packing group | III |
| ICAO Packing group | III |

14.5. Environmental hazards

Environmentally Hazardous Substance/Marine Pollutant



14.6. Special precautions for user

| | |
|-------------------------|----------|
| EMS | F-A, S-F |
| ADR transport category | 3 |
| Emergency Action Code | •3Z |
| Hazard No. (ADR) | 90 |
| Tunnel restriction code | (-) |



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Limited quantities 5 L

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

No data available.

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

UK Regulatory References

Chemicals (Hazard Information & Packaging) Regulations.
Fire precautions Act 1971.

Environmental Listing

No listing noted.

Statutory Instruments

Export of Dangerous Chemicals Regulations.

Approved Code Of Practice

Safety Data Sheets for Substances and Preparations.

Guidance Notes

Workplace Exposure Limits EH40. Introduction to Local Exhaust Ventilation HS(G)37. CHIP for everyone HSG(108).

EU Legislation

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures.

15.2. Chemical Safety Assessment

No chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

Abbreviations used in safety data sheet

ADR: European Agreement on International Carriage of Dangerous Goods by Road.

ADN: European Agreement on the International Carriage of Dangerous Goods by Inland Waterways.

RID: European Agreement on International Carriage of Dangerous Goods by Rail.

IATA: International Air Transport Association.

ICAO-TI: Technical Specification for Safe Transport of Dangerous Goods by Air.

IMDG: International Maritime Dangerous Goods.

TWA: Time weighted average

ATE: Estimated value of acute toxicity

EC No: European Community number

CAS: Chemical Theory Service.

LD50: Substance that causes 50% (half) death in the test animals group (Median Fatal Dose).

LC50: Substance concentration causing 50% (half) death in the test animals group.

EC50: Effective Concentration of the substance causing the maximum of 50%.

PBT: Persistent, Bioaccumulative and Toxic substance.

vPvB: Very Permanent, Very Biofriendly.

SEA: Classification, labeling, packaging regulation

DNEL: Derivative Inactive Level

PNEC: Estimated Unaffected Concentration

BHOT: Specific Target Organ Toxicity



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Information Sources

This SDS is written based on the information received from rawmaterial supplier.
European Chemicals Agency (ECHA)

Revision Comments

This form is designed for the first time for this product.

Classification procedures

H350 May cause cancer.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

Issued By

Bülent Özdemir / CRAD
gbf@crad.com.tr

Issued Note

The certificate information is used exclusively for this SDS. No changes can be made to this SDS without the knowledge and approval of the certificate holder or the certificate information can not be used for another SDS. Otherwise, the certificate will assume no responsibility for the owner SDS.

This SDS is prepared based on the information and documents received from product owner. CRAD or/and SDS author shall not be responsible for incorrect prepared of SDS and pecuniary loss or intangible damages because of deficient or wrong information and documents which comes from product owner.

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