

MATERIAL SAFETY DATA SHEET

KEROSENE (MULTIPLE TYPE)

CAS number: 68008-20-6

UN number: 1223



I. PRODUCT AND COMPANY IDENTIFICATION

Product name: Kerosene.

Trade name: Kerosene oil KO (KO 1 - K; KO 2 - K).

Synonyms (not scientific name): Kerosene oil, Paraffin, Lamp oil, Coal oil.

Supplier's name, address
VIETNAM NATIONAL PETROLEUM GROUP
PETROLIMEX
N°1-Kham Thien Str.-Dong Da Dist.-Hanoi

Contact, Routine inquiries
Vietnam National Petroleum Group
N°1-Kham Thien Str.- Dong Da Dist.-Hanoi
Tel. 04 38512 603 Fax. 04 38512 902

Manufacturer's name and address:

Intended use: Fuel for burner (lamp oil), furnace (coal oil), industrial solvent.

II. HAZARDS IDENTIFICATION

1. Hazard classification:

- OSHA: Hazardous by definition of hazard communication (29 CFR 1910.1200).
- NFPA: Health: 0, Flammable: 2, Reactivity: 0.

2. Warning statement:

- The kerosene oil is a highly flammable product when exposed to fire source at normal temperature.
- The kerosene oil may cause irritation to the nervous system or skin burn in case of direct, repeated and prolonged contact.
- **Precaution when getting in contact with, storing, using:** The kerosene oil evaporates at normal temperature, is stored in liquid form in specialized container, needs to be kept away from heat source, sparks, fire source and children's reach. The kerosene oil should be stored in a well-ventilated area. Use suitable protection equipment when getting in contact with the kerosene oil. To avoid fire or explosion, dissipate electrostatic during transfer by grounding the containers and equipment before transferring the product.

3. Health effects:

Eyes: May cause irritation and damage to the eye.

Inhalation: The kerosene oil's vapor may irritate the respiratory system. Inhaling a highly concentrated kerosene oil's vapor may cause chest tightness, nausea, shortness of breath, arrhythmia, headache. Avoid direct inhalation of the kerosene oil's vapor.

Skin: Repeated and prolonged contact may cause skin's irritation and blister.

Ingestion: May cause nausea, chest tightness, headache, shortness of breath, feeling of drunkenness, confusion, dizziness, hemorrhagic pneumonia, loss of sensation.

III. COMPOSITION / INFORMATION ON INGREDIENTS

Components	CAS Number	Chemical Structure	Concentration (% weight)
1. Kerosene (Hydrocarbon mixture from C9 to C16)	8008-20-6		100
2. Sulphur rate, max			2 level: 0,04 - 0,3

IV. FIRST AID MEASURES

1. Eyes contact:

Take the victim to a safe, well-ventilated space with fresh air. Use clean water to rinse eyes for at least 15 minutes, then get immediate medical attention.

2. Skin contact:

Remove contaminated clothes and shoes. Use water and soap to wash the part of skin exposed to the kerosene oil. In case of allergic or if the skin is seriously damaged, get immediate medical attention.

3. Inhalation:

Take the victim to a safe, well-ventilated space with fresh air. In case of difficulty breathing, CPR, respiratory aids measures must be applied. Get immediate medical attention.

4. Ingestion:

Do not induce vomiting because it might lead to serious lung injuries and complications. Get immediate medical attention.

V. FIRE FIGHTING MEASURES

1. Flammable classification:

The kerosene oil is a highly flammable product. Its flash point is not lower than 38°C. Lower explosive limit (LEL): 0,7%. Upper explosive limit (UEL): 5-7%.

2. Hazardous combustion products: The kerosene oil upon combusted will produce: CO_x, SO_x, NO_x, Hydrocarbon.

3. Causes of fire: Fire sparks, open flames, electrostatic, high temperature, friction spark.

4. Suitable fire extinguishing agents and guidance of fire fighting methods, others measures:

- **Fire extinguishing agents:** Use fire extinguisher and specialized fire fighting equipment, CO₂, sand, fire blanket; use water spray to cool down the fire-exposed surfaces of surroundings containers and equipment.

- **Fire fighting methods:** Take initial emergency response to isolate, extinguish the fire.

+ Cut off the power source related to the fire.

+ Prioritize in rescuing victims, preventing and isolating the kerosene oil's source of leakage, if possible remove others nearby containers and equipment.

+ Use fire extinguisher, sand, fire blanket to extinguish the small fire.

+ Do not use water to extinguish, only use water spray to cool down the fire-exposed surfaces of surroundings containers and equipment.

+ Call and inform the Fire service to ask for assistance.

5. Required equipment, protection gears in case of fire:

- **Fire fighting equipment:** Fixed fire fighting equipment, fire truck, dry powder wheeled fire extinguisher $\geq 25\text{kg}$, CO₂ extinguisher, powder extinguisher 6-10kg, sand, buckets, fire blanket.

- **Protection equipment:** Flame resistant clothing, protection helmet with eye protection, gloves, boots.

6. Special attention notice:

The kerosene oil's vapor is highly flammable, heavier than air and can move far away from the leaked source. If encountered with a fire source may cause fire outbreak to the leaked source.

VI. ACCIDENTAL RELEASE MEASURES

1. Small spill:

- Looking for a way to contain the source of spillage, leakage. Evacuate the incident zone.

- Isolate the area affected by the spill, leak. Assign supervision and warn others about said area.

- Forbid any fire source, fire spark in case of spill, leak.

- Use sand, rag, oil sorbents to clean up the affected area as quickly as possible, then collect into specialized container for proper disposal.

- Prevent the kerosene oil from leaking into the drainage system.

2. Large spill:

- Looking for a way to cut off power source, cease all operation of transferring kerosene oil.

- Isolate the area affected by the spill, leak. Prepare the fire prevention and fire fighting plan, methods.

- Utilize protection plan for the incident zone, prevent the kerosene oil from spreading and deploy recovery measures accordingly to the oil spill response plan of the company.

- Inform the authorities for assistance of oil spill response.

VII. HANDLING AND STORAGE

1. Handling:

- Open the container slowly to release the internal pressure.
- Only transfer kerosene oil using specialized containers. To avoid fire or explosion, dissipate electrostatic during transfer by grounding the containers and equipment before transferring the product.
- During transferring the kerosene oil to/from transportation vehicles, it is strictly forbidden to: start the vehicle's engine, check the power source, maintain and clean the vehicle.
- Forbidden of fire, smoke, usage of portable electrical, communication devices that are not explosion proof in hazardous areas.
- Prevent the spill, leak, drop of the kerosene oil.
- Do not ingest the kerosene oil.
- Use protection equipment when getting into contact with the kerosene oil. Wash hands and clean up after contact.

2. Storage:

- Store kerosene oil in specialized equipment, keep the containers closed. Store in cool, well-ventilated area.
- Prevent the container from strong impact, separate from heat source, fire spark and strong oxidants.
- Install the automatic fire alarm system.
- Comply with the Government's requirements on fire protection and fire fighting, environment protection, oil spill prevention when operating petroleum facilities.
- Ensure natural ventilation or use explosion-proof equipment to keep the storage area, loading/unloading station well-ventilated.
- Install anti-lightning, anti-static equipment, explosion-proof electrical system at the storage, loading/unloading, transportation zone following the Government's requirements.
- Fire fighting equipment must be fully equipped following the Government's requirements when handling, transferring, storing the kerosene oil.

VIII. EXPOSURE CONTROL AND PERSONAL PROTECTION

1. Exposure control:

- Do not inhale directly the kerosene oil's vapor, avoid spilling, leaking, dropping the kerosene oil.

2. Personal protection for working:

- Eye protection: Specialized protection equipment is not required. Goggles are recommended in necessity case.
- Body protection: Use protective clothing.
- Skin protection: Use protective gloves.

3. Personal protection for responding incident:

- The oil spill response team, fire fighting team must be equipped with specialized tool and equipment when approaching and handling the incident.

4. Sanitation measures:

- Wash hands with soap and clean up after getting into contact with the kerosene oil.

IX. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid	Boiling point (°C): 150-300°C
Colour: Pure, clear	Melting point (°C): Not available
Odour: Characteristic odour of Kerosene	Flash point (°C): 38°C
Evaporating pressure: 0,1kPa at 20°C	Kindling point (°C): Not available
Vapor density (Air = 1): 4,5	Upper flammable, explosive limit (%) Substance with air): 5-7
Solubility rate in water: Not soluble	Lower flammable, explosive limit (%) Substance with air): 0,7
pH: Not available	Evaporation rate (kg/l): 0,70
Mass density (kg/m³): Report	Other properties: Standard 02:2020/PLX

X. STABILITY AND REACTIVITY**1. Stability:**

- Is stable under normal conditions and stored at normal temperature and pressure.
- Avoid any heat source, open flames, electrostatic and strong oxidants.

2. Reactivity:

- Do not generate polymerization.
- Products of combustion: CO_x, SO_x, Hydrocarbon etc.

XI. TOXICOLOGICAL INFORMATION

- Chronic poisoning: Stimulates and inhibits the nervous system.
- Poisoning on rabbit: LD50: 2835mg/kg.

XII. ECOLOGICAL INFORMATION

- Toxicity to aquatic ecosystem: Prolonged influence to aquatic animal.
- Air environment: Natural evaporation characteristic.

XIII. DISPOSAL INFORMATION

The disposal process must follow the procedure and general standard about chemical's disposal specified in the Law on Environment protection, assuring the safety for human and environment.

XIV. TRANSPORT INFORMATION

- UN number: 1223.
- Decree N°104/2009/NĐ-CP dated 09/11/2009 of the Government providing the list of dangerous goods and the transport of dangerous goods by road motor vehicles.
- Decree N°29/2005/NĐ-CP dated 10/03/2005 of the Government providing the list of dangerous goods and the transport of dangerous goods by inland waterway.
- DOT (Department of Transportation)
 - Proper Shipping Name: Kerosene
 - Hazard Class: 3
 - UN Number: 1223
 - Packing Group: III
 - Placards: Flammable Liquid

XV. REGULATORY INFORMATION

1. Declaration and registration's status worldwide:

- United nations, EC, International organizations of production, trade, products and oil's transportation from USA, UK, New Zealand, etc. have legal regulation on MSDS's declaration.

2. Classification of dangers according to declared, registered nation:

- EPA SARA 311/312 Title III Hazard Categories (Superfund Amendments And Reauthorization Act.).
- NFPA Ratings: Health: 1, Flammability: 2, Reactivity: 0.
- EEC: R10, R65, S23, S24, S62.
- WHMIS (Canada):
 - + Class B-3: Combustible liquid with a flash point between 37,8oC and 93,3oC.
 - + Class D-2B: Material causing other toxic effects.

XVI. OTHER INFORMATION

Date of compilation: 1st April 2020.

Name of organization, individual responsible for drafting:

VIETNAM NATIONAL PETROLEUM GROUP (PETROLIMEX)

DISCLAIMER FOR USER:

- The information and recommendations in this Material Data Safety Sheet are, to the best knowledge and belief, accurate and reliable as of the date issued, and must be used to apply methods preventing risk, accident.

- Dangerous chemical presented in this sheet might have others dangerous properties under the control of the user.

- Petrolimex shall not be held responsible for any damage resulting from abnormal use of the recommendations presented in this Material Data Safety Sheet.