

MATERIAL SAFETY DATA SHEET (MSDS)

Section 1. Manufacturer or Supplier Information

Manufacturer or Supplier Name : Kaohsiung Refinery, Chinese Petroleum Corporation
Manufacturer or Supplier Address : No.2 Tso-nau Road Kaohsiung, Taiwan 813 Republic of China
Consultant's names and phone numbers : Lee, Jung-Yuang Safety & Health Engineer (07) 5824141 ext.3656
Emergency contact phone numbers : (07) 5833595
Fax numbers : (07)5870947 Safety & Health Department

Section 2. Identification Data

Product name : KEROSENE			
Kerosene burner fuel (hydrocarbon mixtures paraffins, olefins, and aromatics +0.04 to 0.3% sulfur), ca>98%			
Product Name	CAS. No. 08008-20-6	TWA :NIOSH 100 mg/m ³ (10 hour) 1985-86 Toxicity Data Man, intravenous, TD _{Lo} : 403 mg / kg caused distorted perceptions and hallucinations	Man, Oral, TD _{Lo} : 3570 mg/kg produced coughing, vomiting, and increased body temperature Rat, oral, LD _{Lo} : 800 mg/kg; no toxic effected noted
KEROSENE			

Section 3. Physical Data

Boiling Point Range : 347to 617 °F (175to 325 °C)	Odor Threshold : 1 ppm
Freezing Point: <-22°F (<-30°C)	Molecular Weight : Variable
Vapor Pressure : 5 mmHg at 68°F (20°C)	Density 0.80 at 68 °F
Vapor Density (air=1) : 4.5	Water Solubility : Insoluble
Viscosity : 32	Other Solubility: Miscible with other petroleum solvent

Section 4. Fire and Explosion Data

Flash Point: 100 to 162 °F (43 to 72°C)	Autoignition Temperature: 444°F (228°C)	LEL:0.7% v/v	UEL : 5% v/v
Extinguishing Media: For small fires, use dry chemical, carbon dioxide (CO ₂), water spray, or regular foam. For large fires, use water spray, fog, or regular foam. Use a "smothering" technique. <i>Caution! Forced stream of water could scatter flames of burning kerosene.</i>			
Unusual Fires or Explosion hazards: If spilled, and in the absence of ventilation and good air mixing, vapors may travel to an ignition source and flash back. Container may explode in heat of fire. Kerosene burner fuel poses a vapor explosion hazard indoors, out doors, and in sewers.			
Special Fires- fighting Procedures; Since fire may produce toxic thermal decomposition products wear self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode. Also wear fully protective clothing. If possible without risk, remove container from fire area. Apply cooling water to sides containers until fire is well out. Stay away from ends of tanks. For massive fire in cargo area use monitor nozzles or unmanned hose; if impossible, withdraw from area and let fire burn. Withdraw from area immediately if involves tank truck or rail car. Be aware of runoff from fire control methods. Do not release to sewers or waterways.			

Section 5. Reactivity Data

Stability/ polymerization: Kerosene burner fuel is stable at room temperature in closed containers under normal storage and handling conditions.
Hazardous polymerization cannot occur. Any increase in temperature could lead to increasing instability.
Chemical Incompatibilities: Kerosene burner fuel is incompatible with oxidizing materials.
Conditions to Avoid: Excessive heat generation and contact with oxidizing materials.
Hazardous Products of Decomposition: Thermal oxidative decomposition of kerosene burn fuel can produce carbon dioxide(CO ₂), carbon monoxide (CO), hydrocarbons, and small amounts of sulfur dioxide (SO ₂), depending on sulfur content.

Section 6. Health Hazard Data

Carcinogenicity: In 1990 reports, the IARC lists kerosene as Class 7 (substance not assigned an overall evaluation), although occupational exposure in petroleum refining are listed as Class 5 (carcinogenic, animal evidence limited). Since kerosene is obtained during petroleum refining, consider these data.

Summary of Risk: kerosene burn fuel toxicity varies widely methods of manufacture and use. The deodorized and refined kerosenes are least toxic. Those containing benzenes can cause hematopoietic (formative of red blood cell) problems and exposure to large amounts to renal (Kidney) injury. Minor exposure to kerosene can cause irritation and headache.

Medical Conditions Aggravation by Long-term Exposure: None reported.

Targets Organs: Respiratory tract, skin, blood, and kidneys.

Primary Entry Routes: Inhalation, skin contact, ingestion.

Acute Effects: Inhalation of kerosene mists can cause mucous membrane irritation, headache, and drowsiness. High concentration can lead to suffocation, coma, and death by respiratory arrest. Aspiration of vomitus (after ingestion) can lead to serious pneumonitis (inflammation of lungs) and pulmonary hemorrhage (bleeding lungs). Ingestion can cause gastrointestinal (GI) tract irritation, vomiting, and diarrhea. Skin contact with kerosene cause immediate defatting of skin, leaving it dry and cracked.

Chronic Effects: Chronic skin contact leaves skin dry and cracked, easily irritated, and prone to infection from other agents. Chronic dermatitis may result from long-term skin exposure. Chronic overexposure to hydrocarbon vapors may cause neurological impairment.

FIRST AID

Eyes: Gently lift eyelids and flush immediately and continuously with flooding amounts of water until transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly shut. Consult a physician immediately.

Skin: Quickly remove contaminated clothing. Rinse with flooding amounts of water for at least 15 minutes. For reddened or blistered skin, consult a physician. Wash affected area with soap and water.

Inhalation: Remove exposed person to fresh air and support breathing as needed.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Consult a poison control center. Unless otherwise advised, do not induce vomiting since aspiration of vomitus can lead to severe pneumonitis. If spontaneous vomiting occurs, hold the victim's head lower than the hips to prevent pulmonary aspiration.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Observe pulmonary function and treat accordingly.

Section 7. Spill, Leak, and Disposal Procedures

Spill/Leak: Immediately notify safety personnel, isolate and ventilate area, deny entry, and stay upwind. Shut off all sources of ignition-no flares, flames, or smoking in hazard area. Cleanup personnel should prevent against contamination. Water spray reduce may reduce vapor, but it may not prevent ignition in closed space. For small spill, using non-sparking tools, take up with earth, sands, vermiculite, or other absorbent, noncombustible material and place in suitable containers for later disposal. For large spill, dike far ahead of liquid spills for later disposal. Follow applicable OSHA regulations (29 CFR 1910.120).

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state and local regulations.

EPA Designations

Listed as a RCRA Hazardous Waste (40 CFR 261.21): No. D001, Characteristic of ignitability

CERCLA Hazardous Substance (40 CFR 302.4): Not listed

SARA Extremely Hazardous Substance (40 CFR 355): Not listed

SARA Toxic Chemical (40 CFR 372.65): Not listed

Air Contaminant (29 CFR 1910.1000, Subpart Z): Not listed

Section 8. Special Protection Data

Goggles: Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133) Since contact lens use in industry is controversial, establish your own policy.

Respirator: Seek professional advice prior to respirator selection and use. Follow OSHA respirator (CFR 29 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based upon its suitability to provide adequate

worker protection, for giving working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operation (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Wearing! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirator are used, OSHA requires a respirator protective program that includes at least: training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Wear chemically protective gloves, boots, aprons, and storage areas.

Ventilation: Provide general local explosion-proof exhaust ventilation systems to maintain airborne concentrations below the (Sec.2). Local exhaust ventilation is preferred since it prevents contaminant dispersion into the work area by controlling it at its source.


Safety Stations: Make available in the work area emergency eyewash stations, safety/quick-drench showers, and washing facilities.

Contaminated Equipment: Separate contaminated work clothes from street clothes. Launder contaminated work clothing before wearing.

Remove this material from your shoes and clean personal protective equipment.

Comments: Never eat, drink, or smoke in work area. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using toilet, or applying cosmetics.

Section 9. Transportation Information

United Nation Number UN NO.	1223	Hazard Classification	3	Hazard labels	
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Section 10. Information of MSDS Preparation:

Name of Organization	Name of Company : Kaohsiung Refinery, Chinese Petroleum Corporation	
	Address : No.2 Tso-nau Road Kaohsiung, Taiwan 813 Republic of China	
	Phone Number : (07) 5833595	
Person who prepare the MSDS	Job Title : Safety & Health Engineer	Name : Lee, Jung-Yuang
	Signature:	
Date	Friday, April 07, 2000	

Section 11. Flammable and Explosive Data

Flammable liquid: Flash point (closed cup) 12.8°C (55°F). Autoignition Temperature 481°C (898°F).
 Flammable gas: Lower flammable limit (LFL) 1.4% (by volume).
 Vapor pressure: 1.2 bar (12.1 psi) at 20°C (68°F).
 Evaporation rate: High.
 Ignition sources: Open flame, spark, hot surface, static electricity, lightning, etc.
 Fire and explosion hazards: If ignited, and in the absence of ventilation and good air mixing, vapors may travel in an unburning cloud and flash back. Consider may explode in heat of fire.
 Fire fighting: Use water spray or regular foam. For large fires, use dry chemical, carbon dioxide (CO2), water spray, or regular foam. For large fires, use a "specializing" extinguisher. Caution: Forward stream of water could cause injury to personnel.
 Personal Fire-fighting Procedures: Since fire may produce toxic thermal decomposition products, wear self-contained breathing apparatus (SCBA) with a full facepiece operation in pressure-demand or positive-pressure mode. Also wear fully protective clothing. If possible without risk, remove container from fire area. Apply cooling water to sides containers until fire is well out. Stay away from ends of tanks. For massive fire in cargo area use monitor nozzles or unmanned hose, if available, withdraw from area and let fire burn. Withdraw from area immediately if involves tank truck or rail car. Do not rely on fire control methods. Do not release in sewers or waterways.

Section 12. Reactivity Data

Stability/polymerization: Kerosene burner fuel is stable at room temperature in closed containers under normal storage and handling conditions.
 Hazardous polymerization: None known.
 Chemical Incompatibilities: Kerosene burner fuel is incompatible with oxidizing materials.
 Conditions to Avoid: Excessive heat generation and contact with oxidizing materials.
 Hazardous Products of Decomposition: Thermal oxidative decomposition of kerosene burner fuel can produce carbon dioxide (CO2), carbon monoxide (CO), hydrocarbons, and small amounts of sulfur dioxide (SO2), depending on sulfur content.