1. IDENTIFICATION

Product Identifier	Kerosene
Synonyms:	#1 Diesel, #1 Fuel Oil, Fuel Oil No 1, Ultra Low Sulfur Diesel #1, ULSD #1, #1 Diesel 15 ppm, #1 Fuel Oil 15 ppm, Low Sulfur Diesel #1, LSD #1, #1 Diesel 500 ppm, #1 Fuel Oil 500 ppm, Kero, Kerosine Motor Fuel, Ultra Low Sulfur Kero, ULSK, K1, K2, High Sulfur Kerosene
Intended use of the product:	Fuel
Contact:	Gulf Oil Limited Partnership (PikeFuels) 80 William Street Suite 400 Wellesley Hills, MA 02481 Productinfo@pikefuels.com (Non-emergency): 339-933-7200
Contact Information:	EMERGENCY TELEPHONE NUMBER (24 hrs): CHEMTREC (800) 424-9300

2. HAZARD IDENTIFICATION

According to OSHA 29 CFR 1910.1200 HCS

Classification of the Substance or Mixture Classification (GHS-US):

Flammable Liquid	Category 3	H226 – Flammable liquid and vapor.
Flammable Liquid	Category 4	H227 – Combustible liquid
Acute Toxicity Oral	Category 3	H301 – Toxic if swallowed
Acute Toxicity oral	Category 4	H302 - Harmful if swallowed
Aspiration Hazard	Category 1	H304 – May be fatal if swallowed and enters airways
Skin Corrosion/Irritation	Category 2	H315 – Causes skin irritation
Serious Eye Damage/Irritation	Category 2B	H320 – Causes eye irritation
Acute Toxicity Inhalation	Category 2	H330 – Fatal if inhaled
STOT[1] SE[2], Respiratory Tract Irritation	Category 3	H335 – May cause respiratory irritation
STOT SE, Narcotic Effects	Category 3	H336 – May cause drowsiness or dizziness
Carcinogenicity	Category 2	H351 - Suspected of causing cancer
STOT SE	Category 1	H370 – Causes damage to organs
STOT RE[3]	Category 2	H373 – Causes damage to organs through prolonged or repeated exposure
Aquatic Environment, Acute Hazard	Category 1	H410 – Very toxic to aquatic life with long lasting effects
Aquatic Environment, Long-term Hazard	Category 2	H411 – Toxic to aquatic life with long lasting effects
Hazard Not Otherwise Classified		Static accumulating flammable liquid
Hazard Not Otherwise Classified		May release hydrogen sulfide gas

Labeling Elements

Flammable | Irritant | Health Hazard | Environmental Toxicity | Acutely Toxic

Signal Word (GHS-US): **Danger**

[1] STOT – Specific Target Organ Toxicity
[2] SE – Single Exposure
[3] RE – Repeated Exposure

Precautionary Statements (GHS-US):

P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233 - Keep container tightly closed.
P240 – Ground/bond container and receiving equipment.
P241 – Use explosion-proof electrical/ventilating/lighting equipment pursuant to applicable electrical code.
P242 – Use only non-sparking tools.
P243 – Take precautionary measures against static discharge.
P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
P261 – Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 – Wash skin thoroughly after handling.
P270 – Do not eat, drink or smoke when using this product
P271 – Use only outdoors or in a well-ventilated area.
P273 – Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P284 – Wear respiratory protection (in case of inadequate ventilation).
P301+P310 - If swallowed: Immediately call a Poison Center/Doctor/…
P301+P312 – If Swallowed, call a Poison Center/Doctor if you feel unwell.
P302+P352 – IF on skin, wash with plenty of water.
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse with water/shower.
P304+P340 – If Inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 – If in Eyes: rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P307+P311 - If exposed, call a Poison Center/Doctor.
P308+P311 - If exposed or concerned: Get medical advice/attention.
P308+P313 - If exposed or concerned: get medical attention/advice.
P310 – Immediately call a Poison Center or Doctor/Physician.
P312 – Call a Poison Center or Doctor if you feel unwell.
P314 – Get medical attention/advice if you feel unwell.
P320 – Specific treatment is urgent, see Section 4 – First Aid.
P321 – Specific treatment, see Section 4 – First Aid.
P330 – Rinse mouth.
P331 - Do NOT induce vomiting.
P332+P313 - – IF Skin irritation occurs: get medical advice/attention.
P337+P313 – IF eye irritation persists, get medical advice/attention.
P362 – Take off contaminated clothing.
P370+P378 – In case of fire use firefighting foam or other appropriate media for Class B fires to extinguish.
P391 – Collect spillage.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P403+P235 - Store in a well-ventilated place. Keep cool.
P405 - Store locked up.
P501 – Dispose of contents/container in accordance with local/regional/national/international regulation.

Other information:

NFPA 704
Health: 2 – Can cause temporary incapacitation or residual injury (high sulfur products may be lethal)
Fire: 2 – Must be heated or high ambient temperature to burn
Reactivity: 0 – Stable

High sulfur products may produce Hydrogen Sulfide (H2S). H2S may accumulate to toxic or flammable concentrations in enclosed spaces such as tanks or tanker/railcar head spaces. Under normal conditions, this product is not a gas under pressure, explosive, self-heating, pyrophoric, an oxidizer, an organic peroxide, self-reactive, a combustible dust or corrosive to metal. It does not emit flammable gas in contact with water.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Name	Product Identifier (CAS#)	% (w/w)	Classification
Kerosene	8008-20-6	100	Flam Liq 3, H226; Aspiration 1, H304; Skin Irrit. 2, H315; Eye Irrit, 2B, H320; STOT SE 3, H335; STOT SE 3, H336; Aquatic Long-Term 2, H411
Naphthalene	91-20-3	0.04	Flam Liq 4, H227; Acute Tox 4, H302; Carc 2, H351; Aquatic Acute 1, H410; Aquatic Long-Term 2, H411
Sulfur	7704-34-9	0 – 0.5	Acute Tox 3, H301; Skin Irrit 2, H315; Acute Tox 2, H330; STOT SE 1, H370; STOT RE 2, H373

Additional Formulation Information

Kerosine is a complex mixture of paraffins, cycloparaffins, olefins and aromatic hydrocarbons having hydrocarbon chain lengths predominantly in the range of nine to sixteen carbons. May contain a trace amount of benzene (<0.01%). May contain trace amounts of red dye and additives (<0.15%) which are not considered hazardous at the concentrations used. Product must be dyed if sulfur content is >500 ppm.

4. FIRST AID MEASURES

Route	Measures
Inhalation	For those providing assistance, avoid exposure to yourself or others. Remove person to fresh air. If person is not breathing, ensure an open airway and provide artificial respiration. If necessary, provide additional oxygen once breathing is restored, if trained to do so and seek medical attention immediately. If respiratory irritation, dizziness, nausea or unconsciousness occurs seek medical attention immediately.
Ingestion	Aspiration Hazard: DO NOT INDUCE VOMITING. Do not give liquids. Never give anything by mouth to an unconscious person. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspirating liquids into lungs, causing serious damage and chemical pneumonitis. If patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. If the victim is conscious, small amounts of material which enter the mouth should be rinsed out until the taste is dissipated. Seek medical attention immediately.
Eye Contact	In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Check for and gently remove contacts while flushing. Seek medical attention immediately.
Skin Contact	Remove contaminated clothing and shoes. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops. Any injection injury from high pressure equipment should be evaluated immediately by a physician as potentially serious (See NOTES TO PHYSICIAN). Thermal burns may require immediate medical attention.

Most Important Symptoms

Irritating to the skin and mucous membranes. Symptoms may include redness, itching and inflammation. Hydrogen sulfide can cause respiratory paralysis and death, depending on the concentration and duration of exposure. Do not rely on ability to smell vapors, since loss of smell rapidly occurs. May cause nausea, vomiting, diarrhea and signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Aspiration hazard. May cause coughing, chest pains, shortness of breath, pulmonary edema and/or chemical pneumonitis. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking. Long-term exposure may cause dermatitis (itching, irritation, pain and swelling). Kerosene has been shown to augment the toxicity of skin sensitizing agents.

Notes to Medical Professionals

INHALATION: Inhalation exposure can produce toxic effects. Treat intoxications as hydrogen sulfide exposures. At high concentrations hydrogen sulfide may produce pulmonary edema, respiratory depression and/or respiratory paralysis. The priority in treatment should be the establishment of adequate ventilation and the administration of 100% oxygen. Monitor for respiratory distress and anticipate seizures. If cough or difficulty in breathing develops, evaluate for upper respiratory tract inflammation, bronchitis and pneumonitis. This material (or a component) sensitizes the myocardium to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material. Administration of sympathomimetic drugs should be avoided. Consider orotracheal or nasotracheal intubation of airway if patient is unconscious or is in severe respiratory distress.

SKIN or EYES: Accidents involving high-pressure equipment may inject a stream of material through the skin and initially produce

an injury that may not appear serious. Only a small puncture wound may appear on the skin surface but, without proper treatment and depending on the nature, original pressure, volume and location of the injected material, can compromise blood supply to an affected body part. Prompt surgical debridement of the wound may be necessary to prevent irreversible loss of function and/or the affected body part. Immediately wash or flush contaminated eyes with gently flowing water. If possible, irrigate each eye continuously with 0.9% saline (NS).

INGESTION: If ingested, rinse mouth and administer 5 m/kg up to 200 ml of water of dilution if the patient can swallow. Do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs).

Discard any clothing or shoes contaminated as they may be flammable.

5. FIRE-FIGHTING MEASURES

Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment. For additional fire related information, see NFPA 30 or the Emergency Response Guidebook 128.

Extinguishing Media

SMALL FIRES: Small fires in the incipient (beginning) stage may be extinguished using handheld portable fire extinguishers. Any extinguisher suitable for Class B fires, dry chemical, C02, water spray, foam or Halon.

LARGE FIRES: Water spray, fog or firefighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers. Do not use straight water streams as this may spread the fire.

Specific Hazards / Products of Combustion

Vapors may be ignited rapidly when exposed to heat, spark, open flame or other sources of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Combustion may produce smoke, carbon monoxide and other products of incomplete combustion. Oxides of nitrogen or sulfur may also be formed.

Special Precautions and Protective Equipment for Firefighters

Isolate area around container involved in fire. Consider initial downwind evacuation for at least 1,000 feet. If tank, rail car or tank truck is involved in a fire, consider evacuation for 1 mile in all directions.

Fight the fire from the maximum distance. Cool burning tanks, shells or containers exposed to fire and excessive heat with water until well after the fire is out. For massive fires, the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied firefighting foam. Withdraw immediately in case of rising sound from venting safety devices or discoloration the tank.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA - approved pressure-demand self-contained breathing apparatus (SCBA) with full face piece and full protective clothing.

Refer to Section 9 for fire properties of this chemical including flash point, auto ignition temperature and explosive limits.

6. ACCIDENTAL RELEASE MEASURES

ACTIVATE FACILITY SPCC, SPILL CONTINGENCY or EMERGENCY PLAN.

Personal Precautions

Only properly trained personnel should respond to spills. Depending on the size of the spill, downwind or down water receptors may need to be notified.

Evacuate nonessential personnel and remove or secure all ignition sources (flame, spark, hot work, hot metal, etc.). The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Consider wind direction; stay upwind and uphill, if possible. Avoid inhaling vapors. Foam may be used to reduce vapors. Evaluate the direction of product travel, diking, sewers, etc. to identify the extent of the spill area. Do not touch or walk-through spilled material.

Flammable material, even small spills may pose a fire danger for emergency responders. Due to high vapor density, flammable / toxic vapors may be present in low lying areas, dikes, pits, drains or trenches. Ventilate the area. Use of non-sparking tools and intrinsically safe equipment is recommended. Potential for flammable atmosphere should be monitored using a combustible gas indicator positioned downwind of the spill area. See Sections 2 and 7 for further hazard warnings and handling instructions.

Use appropriate personal protective equipment to prevent eye/skin contact and absorption. Use NIOSH approved respiratory protection, if warranted, to prevent exposures above permissible limits (see Section 8). Contaminated clothing should not be worn near sources of ignition.

Emergency Measures
As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Consider wind direction. Secure all ignition sources (flame, spark, hot work, hot metal, etc.) from area. Evaluate the direction of product travel, diking sewers, etc. to confirm spill areas. Do not touch or walk-through spilled material. For large spills, isolate initial action distance downwind 1,000 ft. (300 m).

Environmental Precautions
Control the source of the spill to prevent or minimize environmental impact if it can be done safely. Keep on impervious surface if possible. Use water sparingly to prevent product from spreading. Foam and absorbents may be used to reduce/prevent airborne release. Product is toxic to aquatic life. Isolate environmental receptors including drains, storm sewers and natural water bodies if safe to do so, to prevent the spill from reaching a waterbody. Water intakes on waterways that may be impacted by spills should be closed or protected. Environmentally sensitive areas on waterways that may be impacted by spills should be protected.

Spills to land may infiltrate subsurface soil and impact groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Follow federal, state and local requirements for reporting environmental release where necessary (see Section 15 for further information).

Containment and Clean-Up Methods
Identify the source of the spill and stop the leak, if safe to do so. Protect bodies of water by creating dams to divert the flow away from the waterbody using soil, granular absorbents, absorbent boom or pads or by closing valves on lines that drain to the waterbody. Prevent the spill from running off impervious surfaces if possible. Do not flush down sewer or drainage systems, unless the system is designed and permitted to handle such material. If water is used to prevent product from spreading, use sparingly.

Wind and water current speed and direction and wave action may influence the response actions for a spill to water. Containment boom may be used to collect and confine a spill to water. Skimmers can be used to recover the product. Local specialists should be consulted.

Granular absorbents, hydrophobic spill pads or booms, dry earth, sand or other non-combustible, inert oil absorbing materials may be used to take up spills to land. Carefully shovel, scoop or sweep up into a waste container with clean, non-sparking tools for reclamation or disposal. Response and clean-up crews must be properly trained and must utilize proper personal protective equipment (see Section 8). Licensed waste disposal contactors should be used to transport the waste material generated by cleanup activities to the disposal site.

7. HANDLING AND STORAGE

USE ONLY AS A FUEL.
DO NOT SIPHON BY MOUTH.

Handling Precautions
Handle as a combustible liquid. Keep away from heat, sparks and open flame. No smoking. Electrical equipment should be approved for classified area. Bond and ground containers during product transfer pursuant to NFPA 70 and API RP 2003 to reduce the possibility of static-initiated fire or explosion. Use only non-sparking tools. Follow precautions to prevent static initiated fire. Portable containers should never be filled while in or on a motor vehicle or marine craft. Containers should be placed on the ground. Static electric discharge can ignite fuel vapors when filling non-grounded containers or vehicles on trailers. The nozzle spout must be kept in contact with the container before and during the entire filling operation. Only use approved containers. Cellular phones and other electronic devices may have the potential to emit electrical charges (sparks). Sparks in potentially explosive atmospheres (including fueling areas such as gas stations) could cause an explosion if sufficient flammable vapors are present. Therefore, turn off cellular phones and other electronic devices when working in potentially explosive atmospheres.

Use good personal hygiene practices. Use only with protective equipment specified in Section 8. Avoid repeated and/or prolonged skin exposure. Use only outdoors or in well ventilated areas. Wash hands before eating, drinking, smoking or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves. Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure.

Vapors are heavier than air and can accumulate in low lying areas (e.g., tanks, pits, vaults, dikes, drains, etc.) Follow specific procedures for confined space entry in areas where product may be present pursuant to OSHA requirements in 29 CFR 1910.146. Atmospheric testing using a combustible gas indicator may be necessary in confined areas where liquid product or vapors may be

present.

Procedures such as reduced loading rates and increased monitoring should be followed during “switch loading” operations to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as gasoline) - see API Publication 2003, “Protection Against Ignitions Arising out of Static, Lightning and Stray Currents”.

Storage

Store in accordance with local regulations. Storage areas should comply with NFPA 30 “Flammable and Combustible Liquid Code”. Use approved vented containers. Store in a well-ventilated area. Separate this product from incompatible materials such as oxidizers and strong acids (see Section 10) by distance or secondary containment. Protect containers from damage and vehicular traffic. Keep away from flame, sparks, excessive temperatures and open flame. Post “No Smoking” signs in product storage areas. Keep containers closed and clearly labeled. Label all secondary containers that this material is transferred into with the chemical name and associated hazard(s). Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 “Cleaning Mobile Tanks in Flammable and Combustible Liquid Service” and API RP 2015 “Cleaning Petroleum Storage Tanks”.

Incompatibles
Keep away from strong oxidizers, ignition sources and heat.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Limits

Name	ACGIH TLV	OSHA PELS:	OSHA - Vacated PELs	NIOSH IDLH
Kerosine (petroleum) 8008-20-6	200 mg/m^3 TWA Skin - potential significant contribution to overall exposure by the cutaneous route	-	-	-
Naphthalene 91-20-3	10 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 10 ppm TWA: 50 mg/m^3	10 ppm TWA 50 mg/m^3 TWA 15 ppm STEL 75 mg/m^3 STEL	250 ppm
Hydrogen Sulfide 7783-06-4	1 ppm TWA 5 ppm STEL	Ceiling: 20 ppm Peak: 50 ppm (10 min)	-	100 ppm

Engineering Controls
Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Intrinsically safe equipment and non-sparking tools shall be used in circumstances where concentrations may be within flammable limits. Grounding and bonding shall be used to prevent accumulation and discharge of static electricity. Emergency shower and eyewash should be provided in proximity to handling areas in the event of exposure to decontaminate.

Personal Protective Equipment
Personal protective equipment (PPE) that meets regulatory requirements or recommended national standards is required.

Exposure	Equipment
Eye / Face	Safety glasses with side shields should be worn as a minimum. Safety glasses or goggles and face shield are recommended where there is a possibility of splashing or spraying. Eyewash stations and shower facilities should be located near potential exposure locations.

Skin	Wear appropriate personal protective clothing to prevent skin contact. Gloves constructed of Viton, nitrile, neoprene or PVC are recommended when handling this material. Chemical protective clothing such as of E.I. DuPont TyChem®, Barricade® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.
Respiratory	No respiratory protection is required under typical operating conditions with adequate ventilation. Respiratory protection is required when airborne exposures exceed or are expected to exceed permissible exposure limits. A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be required under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic and the manufacturer for additional guidance on respiratory protection selection and limitations. Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres or any other circumstance where an air-purifying respirator may not provide adequate protection. 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.
Personal Hygiene	Always observe good personal hygiene measures such as washing after handling the material and before eating, drinking, smoking or using the lavatory. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned.
Thermal	Product is stored at ambient temperature. No thermal protection is required except for emergency operations involving actual or potential for fire. Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	Value
Appearance	Colorless or light-yellow liquid. May be dyed red.
Odor	Strong characteristic petroleum distillate odor.
Odor Threshold	<1 ppm
pH	Not Applicable
Melting Point	-55 ˚F (-48 ˚C)
Boiling Point Range	300 to 580 ˚F (149 to 304 ˚C)
Flash Point	>100.4 ˚F (38 ˚C)
Evaporation Rate	Slow, varies with conditions
Flammability (Solid, Gas)	Not Applicable
Flammable Limits	0.7 % - 5.0%
Vapor Pressure	2 -5 mm Hg @ 20 ˚C (68 ˚F)
Vapor Density	4.5 (air=1)
Specific Gravity	0.78 to <1.0 (water=1)
Solubility	Negligible in water; miscible with other petroleum solvents.
Partition Coefficient (N-octanol/water partition coefficient)	Log Pow >.3.5
Autoignition Temperature	410 ˚F (210 ˚C)
Decomposition Temperature	No Data
Viscosity	1.1 mm^2/sec @ 40 ˚C (104 ˚F)
Percent Volatiles	100

10. STABILITY AND REACTIVITY

Stability
Stable under recommended storage, transport and usage conditions. A fire may result if an ignition source is present.

Reactivity
Material is not self-reacting. Flammable concentrations may be present in air. May react with oxidizing materials.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization
Will not occur.

Incompatibility
Keep away from halogens, strong acids, alkalies and strong oxidizers such as nitric and sulfuric acids.

Conditions to Avoid
Avoid high temperatures, open flames, sparks, static electricity, welding, smoking and other ignition sources.

Hazardous Decomposition Products
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

11. TOXICOLOGICAL INFORMATION

Acute toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
Kerosine (petroleum) 8008-20-6	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.28 mg/L (Rat) 4 h
Naphthalene 91-20-3	490 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 340 mg/m^3 (Rat) 1 h
Hydrogen Sulfide (7783-06-4)	-	-	444 ppm (Rat) 4 hr
Sulfur (7704-34-9)	>3000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	>9.23 mg/L (Rat) 4 hr

Delayed and immediate effects as well as chronic effects from short and long-term exposure

MIDDLE DISTILLATES, PETROLEUM: Altered mental state, drowsiness, peripheral motor neuropathy, irreversible brain damage (so-called Petrol Sniffer's Encephalopathy), delirium, seizures and sudden death have been reported from repeated overexposure to some hydrocarbon solvents, naphthas and gasoline.

NAPHTHALENE: Severe jaundice, neurotoxicity (kernicterus) and fatalities have been reported in young children and infants because of hemolytic anemia from overexposure to naphthalene. Persons with glucose 6-phosphate dehydrogenase (G6PD) deficiency are more prone to the hemolytic effects of naphthalene. Adverse effects on the kidney have been reported in persons overexposed to naphthalene but these effects are believed to be a consequence of hemolytic anemia and not a direct effect. A few studies have shown chromosomal effects (elevated levels of Sister Chromatid Exchange or chromosomal aberrations) in vitro. Naphthalene has been classified as Possibly Carcinogenic to Humans (2B) by IARC, based on findings from studies in laboratory animals.

SULFUR: Permanent eye damage (corneal opacities and cataract-like lesions) have been associated with long-term and high-level exposure to sulfur.

HYDROGEN SULFIDE: Hydrogen sulfide gas has an unpleasant odor that diminishes with increased exposure. Eye irritation may occur at levels above 4 ppm. Olfactory fatigue occurs rapidly at levels of 50 ppm or higher. Odor is not a reliable warning property. Respiratory effects include irritation with possible pulmonary edema at levels above 50 ppm. At 500 ppm immediate loss of consciousness and death can occur. NIOSH has determined that 100 ppm hydrogen sulfide is immediately dangerous to life and health (IDLH).

DIESEL EXHAUST: The combustion of diesel fuels produces gases including carbon monoxide, carbon dioxide, oxides of nitrogen and/or sulfur and hydrocarbons that can be irritating and hazardous with overexposure. Long-term occupational overexposure to diesel exhaust and diesel exhaust particulate matter has been associated with an increased risk of respiratory disease, including lung cancer and is characterized as a “known human carcinogen” by the International Agency for Research on Cancer (IARC), as “a reasonably anticipated human carcinogen” by the National Toxicology Program and as “likely to be carcinogenic to humans” by the EPA, based upon animal and occupational exposure studies. However, uncertainty exists with these classifications because of deficiencies in the supporting occupational exposure/epidemiology studies, including reliable exposure estimates.

Adverse effects related to the physical, chemical and toxicological characteristics

Signs and Symptoms Irritating to the skin and mucous membranes. Symptoms may include redness, itching and inflammation. May cause nausea, vomiting, diarrhea and signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Aspiration hazard. May cause coughing, chest pains, shortness of breath, pulmonary edema and/or chemical pneumonitis. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.

Sensitization Not expected to be a skin or respiratory sensitizer.

Mutagenic effects None known.

Carcinogenicity Suspected of causing cancer. Cancer designations are listed in the table below.

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Kerosine (petroleum) 8008-20-6	Confirmed animal carcinogen (A3)	Not Classifiable (3)	Not Listed	Not Listed
Naphthalene 91-20-3	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Reasonably anticipated to be a human carcinogen	Not Listed
Sulfur, Elemental 7704-34-9	Not Listed	Not Listed	Not Listed	Not Listed
Hydrogen sulfide 7783-06-4	Not Listed	Not Listed	Not Listed	Not Listed

Reproductive toxicity: None known

Specific Target Organ Toxicity (STOT) - single exposure: Respiratory system. Central nervous system

Specific Target Organ Toxicity (STOT) - repeated exposure: Not Classified

Aspiration Hazard: The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Potential Health Effects: Vapor irritating to skin, eyes, nose and throat. Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death may occur. High sulfur products may produce Hydrogen Sulfide (H2S). H2S may accumulate to toxic or flammable concentrations in enclosed spaces such as tanks or tanker/railcar head spaces.

WARNING: The burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide and inadequate oxygen levels, which may cause unconsciousness, suffocation and death.

12. ECOLOGICAL INFORMATION

Ecotoxicity This product should be considered toxic to aquatic organisms, with the potential to cause long lasting adverse effects in the aquatic environment.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Kerosine (petroleum) 8008-20-6	72-hr EL50 = 5.0-11 mg/l Algae	96-hr LL50 = 18-25 mg/l Fish	-	48-hr EL50 = 1.4-21 mg/l Invertebrates
Naphthalene 91-20-3	-	96-hr LC50 = 0.91-2.82 mg/l Rainbow trout (static) 96-hr LC50 = 1.99 mg/l Fathead minnow (static)	-	48-hr LC50 = 1.6 mg/l Daphnia magna
Sulfur 7704-34-9	-	96-hr LC50 >10,000 mg/L Western mosquitofish 96-hr LC50 = 866 mg/L Zebrafish	-	-

Hydrogen Sulfide 7783-06-4	-	96-hr LC50 = 0.016 mg/l Fathead minnow 96-hr LC50 = 0.013 mg/l Rainbow trout	-	96-hr LC50 = 0.022 mg/l Gammarus Pseudolimnaeus

Persistence and degradability: Expected to be inherently biodegradable.

Bioaccumulation: Has the potential to bioaccumulate.

Mobility in soil: May partition into air, soil and water.

Other adverse effects: No information available.

Other Information: Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS

The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Shipping containers used for waste must be DOT authorized packages. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Waste packaging should be recycled or disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

14. TRANSPORT INFORMATION

US DOT

UN Identification Number	UN 1223
Proper Shipping Name	Kerosene
Hazard Class	3
Packing Group	III
Marine Pollutant	No
Emergency Response Guidebook Guide Number	128

IATA Information

UN Identification Number	UN 1223
Proper Shipping Name	Kerosene
Hazard Class	3
Packing Group	III
Marine Pollutant	No
Max Quantity Per Package (Cargo)	220L
Max Quantity per Package (Passenger)	60L

IMDG

UN Identification Number	UN 1223
Shipping Name / Description	Kerosene
Hazard Class	3
Packing Group	III
IMDG Label	3
EmS Number	F-E-S-E

15. REGULATORY INFORMATION

U.S. Federal, State and Local Regulatory Information

Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state or local

regulations; consult those regulations applicable to your facility/operation.

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Clean Water Act (Oil Spills)
Any spill or release of this product to "navigable waters" (Essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) or, if not practical, the U.S. Coast Guard with follow up to the National Response Center, as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

EPA Notification (Oil Spills)
If the there is a discharge of more than 1,000-gallons of oil into or upon navigable waters of the United States or if it is the second spill event of 42 gallons or more of oil into water within a twelve (12) month period, a written report must be submitted to the Regional Administrator of the EPA within sixty days of the event.

U.S. Toxic Substances Control Act Chemical Inventory Section 8(b)
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30.

CERCLA Section 103 (Release to the Environment)
The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil, refined and unrefined petroleum products and any indigenous components of such. However, other federal reporting requirements (e.g., SARA Section 304 or the Clean Water Act if the spill occurs on navigable waters) may still apply.

EPA Superfund Amendment & Reauthorization Act (SARA):

SARA Section 302: This product does not contain any component(s) included on EPA's Extremely Hazardous Substance (EHS) List.

SARA Section 304: This product may contain component(s) identified as a CERCLA Hazardous substance which in case of a spill or release **may** be subject to SARA reporting requirements:

Name	Hazardous Substances RQs
Naphthalene	100 lb final RQ 45.4 kg final RQ
Hydrogen Sulfide	100 lb final RQ 45.4 kg final RQ

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

SARA Section 313- Supplier Notification
This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
Naphthalene	0.1 % de minimis concentration
Diethylene Glycol Monomethyl Ether	1.0 % de minimis concentration
Hydrogen sulfide	1.0 % de minimis concentration

State and Community Right-To-Know Regulations:
The following component(s) of this material are identified on the regulatory lists below:

Kerosine (petroleum)

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1091

Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	SN 1091 TPQ: 10000 lb (Under N.J.A.C. 7:1G, environmental hazardous substances in mixtures such as gasoline or new and used petroleum oil may be reported under these categories)
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 – List of Hazardous Substances:	Not Listed

Naphthalene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Carcinogen, initial date 4/19/02
New Jersey Right-To-Know:	SN 1322 SN 3758
Pennsylvania Right-To-Know:	Environmental hazard Present (particulate)
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Carcinogen
New Jersey - Environmental Hazardous Substances List:	SN 1322 TPQ: 500 lb (Reportable at the de minimis quantity of >0.1%)
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 – List of Hazardous Substances:	100 lb RQ (air); 1 lb RQ (land/water)

Sulfur, Elemental

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1757
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Listed
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Hydrogen Sulfide

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1017

Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Extraordinarily hazardous
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Extraordinarily hazardous
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 1017 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	100 lb RQ (air); 100 lb RQ (land/water)

CEPA - Domestic Substances List (DSL)

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian Regulatory Information (WHMIS)

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all of the information required by those regulations.

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Kerosine (petroleum)	B3,D2B	1%
Naphthalene	B4,D2A	0.1%
Sulfur, Elemental	B4	1%
Hydrogen sulfide	A,B1,D1A,D2B	1%

16. OTHER INFORMATION

Description of Revisions

Revised to meet Globally Harmonized System for chemical hazard communication requirements pursuant to OSHA regulatory revisions 77 FR 17884, March 26, 2012.

Abbreviations

˚F	Degrees Fahrenheit (temperature)	mg	Milligram
<	Less than	mL	Milliliter
=	Equal to	mm^2	Square millimeter
>	Greater than	mmHg	Millimeters of mercury (pressure)
AP	Approximately	ppm	Parts per million
˚C	Degrees Centigrade (temperature)	sec	Second
kg	Kilogram	ug	Microgram
L	Liter		

Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists	NTP	National Toxicology Program
		OPA	Oil Pollution Act of 1990
AIHA	American Industrial Hygiene Association	OSHA	U.S. Occupational Safety & Health Administration
AL	Action Level		
ANSI	American National Standards Institute	PEL	Permissible Exposure Limit (OSHA)
API	American Petroleum Institute	RCRA	Resource Conservation and Recovery Act Reauthorization Act of 1986 Title III
CAS	Chemical Abstract Service		
CERCLA	Comprehensive Emergency Response, Compensation and Liability Act	REL	Recommended Exposure Limit (NIOSH)
		RVP	Reid Vapor Pressure
DOT	U.S. Department of Transportation	SARA	Superfund Amendments and
EC50	Ecological concentration 50%	SCBA	Self-Contained Breathing Apparatus
EPA	U.S. Environmental Protection Agency	SPCC	Spill Prevention, Control and

ERPG	Emergency Response Planning Guideline		Countermeasures
GHS	Global Harmonized System	STEL	Short-Term Exposure Limit (generally 15 minutes)
HMIS	Hazardous Materials Information System		
IARC	International Agency for Research On Cancer	TLV	Threshold Limit Value (ACGIH)
IATA	International Air Transport Association	TSCA	Toxic Substances Control Act
IMDG	International Maritime Dangerous Goods	TWA	Time Weighted Average (8 hr.)
Koc	Soil Organic Carbon	UN	United Nations
LC50	Lethal concentration 50%	UNECE	United Nations Economic Commission for Europe
LD50	Lethal dose 50%		
MSHA	Mine Safety and Health Administration	WEEL	Workplace Environmental Exposure Level (AIHA)
NFPA	National Fire Protection Association		
NIOSH	National Institute of Occupational Safety and Health	WHMIS	Canadian Workplace Hazardous Materials Information System
NOIC	Notice of Intended Change		

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** End of Safety Data Sheet **