

**Section 1: Product and Company Identification**

**Manufacturer:** Kern Energy – 7724 East Panama Lane – Bakersfield – CA 93307-9210  
 (661) 845-0761 – [sds@KernEnergy.com](mailto:sds@KernEnergy.com) – [www.KernEnergy.com](http://www.KernEnergy.com)

**Chemical Name:** Mixture of Petroleum Hydrocarbons  
**Chemical Family:** Aliphatic and Aromatic Hydrocarbons  
**Trade Name:** PS-1500, Fuel Oil  
**Synonyms:** Bunker Oil, Coker Feed, Vacuum Unit Feed  
**Recommended Uses:** Residual Fuel Oil  
**CAS #:** 68333-22-2  
**RTECS #:** LS8960000  
**SDS Number:** KOP023  
**SDS Date:** September 30, 2022

**CHEMTREC (800) 424-9300**  
**or (703) 527-3887**  
**POISON CONTROL CENTER**  
**(800) 346-5922**

**Section 2: Hazard Identification**

**Signal Word:** **DANGER**

**Pictograms:** Health Hazard – Exclamation Mark - Environment



**Physical Hazards:** Not Classified

**Health Hazards:** Acute toxicity/inhalation (Category 4) Harmful if inhaled.  
 Carcinogenicity (Category 2) Suspected of causing cancer.  
 Reproductive Toxicity (Category 2) Suspected of damaging fertility or the unborn child  
 Specific Target Organ Toxicity - Repeated Exposure (Category 2) May cause damage to organs through prolonged or repeated exposure. Blood. Liver. Thymus.

**Environmental Hazards:** Acute Aquatic Toxicity (Category 1) Very toxic to aquatic life.  
 Chronic Aquatic Toxicity (Category 1) Very toxic to aquatic life with long lasting effects.

**Precautionary Statements:**

**Prevention:** Avoid breathing fumes or mist. Use only outdoors or in a well-ventilated area. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. Store in a well-ventilated place. Keep container tightly closed. Avoid release to the environment.

**Response:** **If inhaled:** Remove person to fresh air and keep comfortable for breathing. Seek medical attention if you feel unwell.  
**If exposed or concerned:** Get medical advice/attention. Manufacturer/Supplier or competent authority to select medical advice or attention as appropriate. Immediately get medical attention. Do NOT induce vomiting.  
**Collect spillage.**

**Storage:** Store in a well-ventilated place. Keep cool. Store locked up.

**Disposal:** Dispose of contents/containers in accordance with local, state and national regulations.

**HNOC:\*** Hot product can cause burns to skin. May release toxic hydrogen sulfide gas that could accumulate at toxic concentrations inside closed areas. May dull the sense of smell and has a high odor threshold, so do not rely on odor as an indication of hazard.

**Supplemental Info:** CERCLA Rating: (Scale 0-3) Health = 1, Fire = 1, Reactivity = 0, Persistence = 1  
 NFPA Rating: (Scale 0-4) Health = 0, Fire = 1, Reactivity = 0  
 HMIS Rating: Fire 2, Health 1\*\*, Physical 0, \*\*Chronic

\* Hazard(s) not otherwise classified or not covered by GHS

### Section 3: Composition / Information on Ingredients

Component	CAS No.	Percent
Residues, atmospheric	68333-22-2	100

### Section 4: First Aid Measures

**General Information:** Vaporization of H<sub>2</sub>S that has been trapped in clothing can be dangerous to rescuers

**Eye Contact:** Immediately flush eyes with water for at least 15 minutes. Get medical attention if irritation persists.

**Skin Contact:** Wash contaminated areas thoroughly with soap and water or with waterless hand cleanser. Obtain medical attention if irritation or redness develops and persists. Remove contaminated clothing and shoes.

**Ingestion:** Get medical attention immediately. Do not induce vomiting. Never give anything by mouth to an unconscious person. Careful evacuation of stomach by medical personnel imperative.

**Inhalation:** Remove to fresh air. If not breathing give artificial respiration. If breathing is difficult give oxygen. Get immediate medical attention.

**Most important symptoms and effects, both acute and delayed:** H<sub>2</sub>S has a broad range of effects dependent on the airborne concentration and length of exposure: 0.02 ppm odor threshold, smell of rotten eggs; 10 ppm eye and respiratory tract irritation; 100 ppm coughing, headache, dizziness nausea, eye irritation, loss of sense of smell in minutes; 200 ppm potential for pulmonary edema after >20-30 minutes; 500 ppm loss of consciousness after short exposures, potential for respiratory arrest; >1000ppm immediate loss of consciousness, may lead rapidly to death, prompt cardiopulmonary resuscitation may be required. Do not depend on sense of smell for warning. H<sub>2</sub>S causes rapid olfactory fatigue (deadens sense of smell).

### Section 5: Fire Fighting Measures

Clear fire area of all non-emergency personnel.

**Extinguishing Media:** Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

**Unsuitable Extinguishing Media:** Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

**Special hazards arising from the substance or mixture:** Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Oxides of nitrogen. Oxides of Sulfur. Unidentified organic and inorganic compounds. Flammable vapors may be present even at temperatures below the flash point. The vapor is heavier than air, spreads along the ground and distant ignition is possible. Sinks in fresh water, floats on sea water and may reignite on water surface. Hydrogen sulfide (H<sub>2</sub>S) and toxic Sulphur oxides may be given off when this material is heated. Do not depend on sense of smell for warning.

**Advice for firefighters:** Wear full protective clothing and self-contained breathing apparatus.

**Additional Advice:** Keep adjacent containers cool by spraying with water. If possible remove containers from the danger zone. If the fire cannot be extinguished the only course of action is to evacuate immediately.

## Section 6: Accidental Release Measures

**Avoid contact with spilled or released material:** For guidance on selection of personal protective equipment see Section 8. See Section for information on disposal. Observe the relevant local and international regulations. Remove contaminated clothing. Evacuate the area of all non-essential personnel. Avoid contact with skin, eyes and clothing. Ventilate contaminated area thoroughly.

**Personal Precautions, Protective Equipment and Emergency Procedures:** May ignite on surfaces at temperatures above auto-ignition temperature. Do not breathe fumes. Do not operate electrical equipment.

**Environmental Precautions:** Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and firefighting water). Avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapor or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by grounding all equipment.

**Methods and Material for Containment and Cleaning Up:** For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. Shovel into a suitable clearly marked container for disposal or reclamation in accordance with local regulations.

**Additional Advice:** Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained.

## Section 7: Handling and Storage

**Handling:** Avoid breathing vapors or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Section 8. Prevent spillages.

**Storage:** Keep containers closed and clearly labeled. Use approved vented storage containers. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition. Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. 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."

**Incompatibilities:** Keep away from strong oxidizers.

**Unusual Hazards:** The inherent toxic and olfactory (sense of smell) fatiguing properties of hydrogen sulfide require that air monitoring alarms be used if concentrations are expected to reach harmful levels such as in enclosed spaces, heated transport vessels and spill or leak situations. If the air concentration exceeds 50 ppm, the area should be evacuated unless respiratory protection is in use. Avoid prolonged or repeated contact with skin. When using do not eat or drink. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ground all equipment.

## Section 8: Exposure Control and Personal Protection

**Component Exposure Limits:** See Table 1 – Component Exposure Limits.

Table 1 – Component Exposure Limits						
Percent Max Vol. %	Component	CAS #	Recommended Exposure Limits - ppm (mg/m <sup>3</sup> )			
			8-HR TWA	STEL	CEILING	*Agency
100%	Residues, atmospheric	68333-22-2	None	None	None	None
Key: O – OSHA, C= Cal / OSHA, N=NIOSH						

**Engineering Measures:** Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

### Personal Protective Equipment

**Respiratory:** A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible 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. 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.

**Hands:** Gloves constructed of nitrile, neoprene, or PVC are recommended.

**Eyes:** Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

**Skin and Body:** Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® 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.

## Section 9: Physical and Chemical Properties

### General Information:

Physical State: Viscous liquid

Form: Liquid

Color: Black

Odor: Characteristic Hydrocarbon

### Important Health, Safety and Environment Information:

Boiling Point/Range: 800°F

Flash Point (PMCC): 325°F

Auto Ignition Temp: ND

Lower Flammability Limit: ND

Upper Flammability Limit: ND

Vapor Pressure (psi @100°F): Negligible

Vapor Density: Heavier than air

Freezing Point/Melting Point: NA

Solubility (Water): Insoluble

Specific Gravity: 0.9813

Evaporation Rate: ND

Viscosity (SSU@ 100°F): ND

pH: NA

**Other Information:**

Volatility (Vol. %): 100

Pour Point: NA

API Gravity: 12.7

**Note:** Physical Data is typical values based on material tested, but may vary based on composition. Values should not be accepted as guaranteed for every lot or as specifications for this product.

<b>Section 10: Stability and Reactivity</b>
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**Chemical Stability:** This is a stable material. This product is considered stable during handling and storage under normal ambient conditions of pressure and temperature.

**Hazardous Reaction Potential:** Will not occur.

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

**Incompatible Products:** Keep away from strong acids and oxidizing agents.

**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Burning produces carbon dioxide and carbon monoxide. May release acrid smoke and irritating fumes.

**Hazardous Polymerization:** Hazardous polymerization will not occur.

<b>Section 11: Toxicological Information</b>
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**Potential Health Effects:** See Table 2.

<b>Table 2 – Potential Health Effects</b>			
CHRONIC EFFECTS/ CARCINOGENICITY:	There is inadequate evidence for carcinogenicity in humans caused from Residual Fuel Oil. There is sufficient evidence (IARC) for carcinogenicity in animals. IARC: Group 2B		
	<b>ROUTE/ORGANISM</b>	<b>DOSE</b>	<b>EFFECT</b>
SKIN/EYE IRRITATION	Skin/Rat	Lowest published toxic dose: 40 mL/kg/4 week intermittent	Liver: Changes in liver weight Blood: Changes in erythrocyte (RBC) count Nutritional and Gross Metabolic: Weight loss or decreased weight gain
ACUTE TOXICITY DATA	N/R	N/R	N/R
MULTIPLE DOSE DATA	N/R	N/R	N/R
MUTAGENICITY:	N/R	N/R	N/R
REPRODUCTIVE	N/R	N/R	N/R

**Skin Corrosion:** Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed.

**Contact with eyes** may cause mild irritation.

**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.

**Inhalation:** Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

**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.

**Respiratory Organs Sensitization/Skin Sensitization:** This product is not reported to have any skin sensitization effects.

**Generative Cell Mutagenicity:** This product is not reported to have any mutagenic effects. Material of similar composition has been positive in a mutagenicity study.

**Carcinogenicity:** Mixture: Suspected of causing cancer. Dermal carcinogenicity: positive – mice: Studies have shown that similar products produce skin tumors in laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation. This product is similar to Diesel Fuel. IARC classifies whole diesel fuel exhaust particulates as probably carcinogenic to humans (Group 2A) and NIOSH regards it as a potential cause of occupational lung cancer based on animal studies and limited evidence in humans.

**Reproductive Toxicity:** This product is not reported to have any reproductive toxicity effects.

**Specified Target Organ General Toxicity: Single Exposure:** This product is not reported to have any specific target organ general toxicity single exposure effects.

**Specified Target Organ General Toxicity: Repeated Exposure:** Specific Target Organ Toxicity - Repeated Exposure (Category 2) May cause damage to organs through prolonged or repeated exposure: Blood, Liver, and Thymus.

**Aspiration Respiratory Organs 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.

## Section 12: Ecological Information

### Ecotoxicity

**General Product Information:** Acute aquatic toxicity values for heavy fuel oils were compared on the basis of the loading rates of water accommodated fractions, LL50 values for acute toxicity endpoints were always >100 mg/L. In some instances, no adverse effects were observed at the maximum loading rate of 1000 mg/L. (API Petroleum Testing Group).

**Component Analysis:** Fuel oil No. 2 (68476-30-2) Test & Species Conditions 96 Hr. LC50 Pimephales promelas 35 mg/L [flow-through] [Flow through] 48 Hr. EC50 Daphnia magna 1.09 - 3.4 mg/L [Static].

**Persistence/Degradability:** No information available.

**Bioaccumulation:** No information available.

**Mobility in Soil:** No information available.

## Section 13: Disposal Considerations

**Waste Disposal Instructions:** See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations. Recycle unused material. This product may meet the definition of a hazardous waste under RCRA (40 CFR 261) or definitions of a hazardous waste by State or local regulation. Analysis of the waste generated must be tested to correctly categorize the material for disposal. If this product meets the definition of a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

**Disposal of Contaminated Containers or Packaging:** Dispose of contents/container in accordance with local/regional/national/international regulations.

## Section 14: Transportation Information

**D.O.T. SHIPPING NAME:** Elevated Temperature Liquid, n.o.s.  
**D.O.T. HAZARD CLASSIFICATION:** 9  
**D.O.T. IDENTIFICATION NUMBER:** UN3257  
**DOT PACKING GROUP:** III

### Section 15: Regulatory Information

**OSHA** – This material is classified as hazardous under OSHA regulations.

**SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4):** This material contains one or more of the following chemicals required to be identified under SARA 313: 0.1 % de minimis concentration: Naphthalene (91-20-3) CERCLA: 100 lb. final RQ; 45.4 kg final RQ

#### SARA 311/312 - Hazard Classes

- |                                      |     |
|--------------------------------------|-----|
| 1. Immediate (acute) health effects: | Yes |
| 2. Delayed (chronic) health effects: | Yes |
| 3. Fire Hazard:                      | Yes |
| 4. Sudden Release of Pressure:       | No  |
| 5. Reactivity Hazard:                | No  |

**State Regulations:** The following components appear on one or more of the following state hazardous substances lists: Naphthalene (91-20-3) CA, MA, MN, NJ, PA.

**CALIFORNIA PROPOSITION 65 WARNING:** Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm may be found in crude oil and petroleum products. Although it is possible to sufficiently refine a crude oil or its end products to remove the potential for cancer, we are advising that one or more of the listed chemicals may be present in some detectable quantities. Read and follow directions and use care when handling crude oil and petroleum products.

#### Canada:

**WHMIS IDL:** No components are listed in the WHMIS IDL.

### Section 16: Other Information

**Disclaimer:** The information and recommendations contained herein are based upon tests believed to be reliable. However, Kern Energy (Kern) does not guarantee their accuracy or completeness nor shall any of this information constitute a warranty, whether expressed or implied, as to the safety of the goods, the merchantability of the goods, or the fitness of the goods for a particular purpose. Adjustment to conform to actual conditions of usage may be required. Kern assumes no responsibility for results obtained or for incidental or consequential, including lost profits arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied.