

Section 1: IDENTIFICATION

Product Name: Crude Oil - Kerrobert Heavy Blend

Synonyms: Not available.

Product Use: Refinery feedstock.

Restrictions on Use: Not available.

Manufacturer/Supplier: Plains Midstream Canada ULC, and Affiliates
Suite 1400, 607 – 8th Avenue SW
Calgary, Alberta
T2P 0A7

Phone Number: 1-866-875-2554

Emergency Phone: USA - CHEMTREC 1-800-424-9300 / CANADA - CANUTEC 1-888-CAN-UTEC (226-8832), 613-996-6666 or *666 on a cellular phone

Date of Preparation of SDS: March 22, 2019

Section 2: HAZARD(S) IDENTIFICATION

GHS INFORMATION

Classification: Flammable Liquids, Category 1
Acute Toxicity - Inhalation, Category 2
Skin Irritation, Category 2
Eye Irritation, Category 2A
Germ Cell Mutagenicity, Category 1B
Carcinogenicity, Category 1A
Toxic to Reproduction, Category 2
Specific Target Organ Toxicity (Single Exposure), Category 3 - Narcotic Effects
Specific Target Organ Toxicity (Repeated Exposure), Category 2
Aspiration Hazard, Category 1

LABEL ELEMENTS

Hazard

Pictogram(s):



Signal Word: Danger

Hazard Statements: Extremely flammable liquid and vapor.
Fatal if inhaled.
Causes skin irritation.
Causes serious eye irritation.
May cause genetic defects.
May cause cancer.
Suspected of damaging fertility or the unborn child.
May cause drowsiness or dizziness.
May cause damage to organs through prolonged or repeated exposure.
May be fatal if swallowed and enters airways.



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Precautionary Statements

Prevention: Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Keep away from heat, sparks, open flames, and hot surfaces. – No smoking.
 Keep container tightly closed.
 Ground/bond container and receiving equipment.
 Use explosion-proof electrical, ventilating, and lighting equipment.
 Use only non-sparking tools.
 Take precautionary measures against static discharge.
 Do not breathe mist, vapours, or spray.
 Wash thoroughly after handling.
 Use only outdoors or in a well-ventilated area.
 Wear protective gloves, protective clothing and eye protection.
 Wear respiratory protection.

Response: If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 If inhaled: Remove person to fresh air and keep comfortable for breathing.
 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 Immediately call a poison center or doctor.
 Do NOT induce vomiting.
 If skin irritation occurs: Get medical advice/attention.
 If eye irritation persists: Get medical advice/attention.
 Wash contaminated clothing before reuse.
 In case of fire: Use dry chemical, CO2, water spray or alcohol-resistant foam to extinguish.

Storage: Store in a well-ventilated place. Keep container tightly closed.
 Keep cool.
 Store locked up.

Disposal: Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Hazards Not Otherwise Classified: Not applicable.

Ingredients with Unknown Toxicity: None.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200). This material is considered hazardous by the Hazardous Products Regulations.

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| Section 3: COMPOSITION / INFORMATION ON INGREDIENTS |
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| Hazardous Ingredient(s) | Common name / Synonyms | CAS No. | % wt./wt. |
|-------------------------|---------------------------|-----------|-----------|
| Petroleum | Not available. | 8002-05-9 | 100 |
| Sulfur | Sulphur | 7704-34-9 | 1 - 5 |
| Hexane | Not available. | 110-54-3 | 1 - 5 |
| Pentane | Not available. | 109-66-0 | 1 - 5 |
| Butane, 2-methyl- | Isopentane | 78-78-4 | 1 - 5 |



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|-------------------------------------|-------------------|-------------|----------|
| Heptane | Not available. | 142-82-5 | 1 - 5 |
| Octane | Not available. | 111-65-9 | 1 - 5 |
| Benzene | Not available. | 71-43-2 | 0.1 - 1 |
| Benzene, methyl- | Toluene | 108-88-3 | 0.1 - 1 |
| Benzene, dimethyl- | Xylene | 1330-20-7 | 0.1 - 1 |
| Polycyclic Aromatic Hydrocarbons | Not available. | 130498-29-2 | variable |
| Hydrogen sulfide (H ₂ S) | Hydrogen sulphide | 7783-06-4 | < 0.1 |

Section 4: FIRST-AID MEASURES

Inhalation: If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center or doctor. If breathing or the heart stops, trained personnel should immediately begin artificial respiration (AR) or cardiopulmonary resuscitation (CPR) respectively. Get medical attention immediately.

Acute and delayed symptoms and effects: Fatal if inhaled. May cause drowsiness or dizziness. May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Excessive inhalation may cause headache, dizziness, confusion, loss of appetite and/or loss of consciousness. This product contains Hydrogen sulphide which may accumulate in confined spaces. Inhalation of Hydrogen sulphide may cause loss of sense of smell, major irritation of the respiratory tract, headache, nausea, vomiting, dizziness, and fluid buildup in the lungs (pulmonary edema), which can be fatal. At 300 ppm unconsciousness may occur after 20 minutes. From 300 to 500 ppm, death can occur within 1 to 4 hours of continuous exposure. At 500 ppm the respiratory system is paralyzed, the victim collapses almost instantaneously, and death can occur after exposure of only 30 to 60 minutes. Above 500 ppm Hydrogen sulphide may cause immediate loss of consciousness; death is rapid, and possibly immediate.

Eye Contact: If in eyes: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Acute and delayed symptoms and effects: Causes serious eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. Hydrogen sulphide may cause eye irritation at 1-20 ppm and acute conjunctivitis at higher concentrations. Above 50 ppm H₂S, eye irritation may include symptoms of redness, severe swelling, tearing, sensitivity to light and the appearance of 'Halos' around lights.

Skin Contact: If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Acute and delayed symptoms and effects: Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion: If swallowed: Do NOT induce vomiting. Immediately call a poison center or doctor. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Never give anything by mouth to an unconscious person.

If breathing or the heart stops, trained personnel should immediately begin artificial respiration (AR) or cardiopulmonary resuscitation (CPR) respectively. Get medical attention immediately.

Acute and delayed symptoms and effects: May be fatal if swallowed and enters airways. May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

General Advice: In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

Note to Physicians: Symptoms may not appear immediately. For inhalation of Hydrogen Sulphide, consider oxygen.

Section 5: FIRE-FIGHTING MEASURES

FLAMMABILITY AND EXPLOSION INFORMATION

Extremely flammable liquid and vapor. Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion and poison hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water. When heated, this material may evolve toxic and flammable Hydrogen sulphide.

If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

Fire involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.

Sensitivity to Static Discharge: Take precautionary measures against static discharge. This material is sensitive to static discharge.

MEANS OF EXTINCTION

Suitable Extinguishing Media: Small Fire: Dry chemical, CO₂, water spray or alcohol-resistant foam.

Large Fire: Water spray, fog or alcohol-resistant foam. Move containers from fire area if you can do it without risk. Dike fire-control water for later disposal; do not scatter the material.

Unsuitable Extinguishing Media: Use water spray or fog; do not use straight streams. CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

Products of Combustion: Oxides of carbon. Oxides of sulphur. Aldehydes.

Protection of Firefighters:

TOXIC; may be fatal if inhaled, ingested or absorbed through skin. Inhalation or contact with some of these materials will irritate or burn skin and eyes. Fire will produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation. Runoff from fire control or dilution water may cause pollution. Hydrogen sulphide is heavier than air and may collect in low lying areas and confined spaces. Wear positive pressure self-contained breathing apparatus (SCBA). Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

Section 6: ACCIDENTAL RELEASE MEASURES

- Emergency Procedures:** As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded.
- Personal Precautions:** Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Do not touch or walk through spilled material. Use personal protection recommended in Section 8. Don full-face, positive pressure, self-contained breathing apparatus.
- Environmental Precautions:** Prevent entry into waterways, sewers, basements or confined areas.
- Methods for Containment:** Stop leak if you can do it without risk. A vapor suppressing foam may be used to reduce vapors.
- Methods for Clean-Up:** Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material.
- Other Information:** See Section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Handling:
Do not swallow. Do not breathe mist, vapours, or spray. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, sparks, open flames, and hot surfaces. – No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Harmful concentrations of hydrogen sulfide (H₂S) gas can accumulate in excavations and low-lying

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areas as well as the vapour space of storage and bulk transport compartments. See Section 8 for information on Personal Protective Equipment.

Storage:

Limit quantity of material in storage. Restrict access to storage area. Post appropriate warning signs. Keep storage area separate from populated work areas. Consider leak detection and alarm systems, as required. Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up. Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children. Head spaces in storage containers may contain toxic Hydrogen sulphide gas. Structural materials and lighting and ventilation systems should be corrosion resistant.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Component

Petroleum [CAS No. 8002-05-9]

ACGIH: No TLV established.

OSHA: 500 ppm (TWA), 2000 mg/m³ (TWA);
400 ppm (TWA) [Vacated];

Sulphur [CAS No. 7704-34-9]

ACGIH: 10 mg/m³ (TWA) (Inhalable.); 3 mg/m³ (TWA) (Respirable.); For Particles (Insoluble or Poorly Soluble) Not Otherwise Specified

OSHA: 15 mg/m³ (Total dust) (TWA), 5 mg/m³ (Respirable fraction) (TWA); For Particulates Not Otherwise Regulated (PNOR).

Hexane [CAS No. 110-54-3]

ACGIH: 50 ppm (TWA); Skin, BEI (1996)

OSHA: 500 ppm (TWA), 1800 mg/m³ (TWA); Skin.
50 ppm (TWA) [Vacated];

Pentane [CAS No. 109-66-0]

ACGIH: 1000 ppm (TWA); (2013)

OSHA: 1000 ppm (TWA), 2950 mg/m³ (TWA);
600 ppm (TWA); 750 ppm (STEL) [Vacated];

Isopentane [CAS No. 78-78-4]

ACGIH: 1000 ppm (TWA); (2013)

OSHA: No PEL established.

Heptane [CAS No. 142-82-5]

ACGIH: 400 ppm (TWA); 500 ppm (STEL); (1979)

OSHA: 500 ppm (TWA), 2000 mg/m³ (TWA);
400 ppm (TWA); 500 ppm (STEL) [Vacated];

Octane [CAS No. 111-65-9]

ACGIH: 300 ppm (TWA); (1979)

OSHA: 500 ppm (TWA), 2350 mg/m³ (TWA);
300 ppm (TWA); 375 ppm (STEL) [Vacated];

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Benzene [CAS No. 71-43-2]

ACGIH: 0.5 ppm (TWA); 2.5 ppm (STEL); Skin; A1; BEI (1996)

OSHA: 1 ppm (TWA); 5 ppm (STEL);

Toluene [CAS No. 108-88-3]

ACGIH: 20 ppm (TWA); A4; BEI (2006)

OSHA: 200 ppm (TWA); 300 ppm (C); 500 ppm (Peak) (Maximum duration: 10 minutes.)
100 ppm (TWA); 150 ppm (STEL) [Vacated];

Xylene [CAS No. 1330-20-7]

ACGIH: 100 ppm (TWA); 150 ppm (STEL); A4; BEI (1992)

OSHA: 100 ppm (TWA), 435 mg/m³ (TWA);
150 ppm (STEL) [Vacated]

Polycyclic Aromatic Hydrocarbons [CAS No. 130498-29-2]

ACGIH: A2; BEI; Exposure by all routes should be carefully controlled to levels as low as possible (1990); For Benz[a]anthracene

OSHA: 0.2 mg/m³ (TWA); For benzene-soluble fraction.

Hydrogen sulphide [CAS No. 7783-06-4]

ACGIH: 1 ppm (TWA); 5 ppm (STEL); (2009)

OSHA: 20 ppm (C); 50 ppm (Peak) (Maximum duration: 10 mins. once only if no other meas. exp. occurs.)
10 ppm (TWA); 15 ppm (STEL) [Vacated]

PEL: Permissible Exposure Limit

TLV: Threshold Limit Value

TWA: Time-Weighted Average

STEL: Short-Term Exposure Limit

C: Ceiling

Engineering Controls:

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits. Use explosion-proof electrical, ventilating, and lighting equipment.

PERSONAL PROTECTIVE EQUIPMENT (PPE)



Eye/Face Protection:

Wear safety glasses. Ensure that eyewash stations are close to the workstation location. Use equipment for eye protection that meets the standards referenced by CSA Standard CAN/CSA-Z94.3-92 and OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

Hand Protection:

Wear protective gloves. Consult manufacturer specifications for further information.

Skin and Body Protection:

Wear protective clothing. Flame resistant clothing that meets the NFPA 2112 and CAN/CGSB 155.20 standards is recommended in areas where material is stored or handled.



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Respiratory Protection:

Wear respiratory protection. If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4-11, with organic vapor cartridge, or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.

General Hygiene Considerations:

Handle according to established industrial hygiene and safety practices. Consult a competent industrial hygienist to determine hazard potential and/or the PPE manufacturers to ensure adequate protection.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

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| Appearance: | Dark brown liquid. |
| Colour: | Brown. |
| Odour: | Rotten eggs. May be odourless (due to high H ₂ S concentrations present). |
| Odour Threshold: | 0.0047 ppm, (Hydrogen sulphide) |
| Physical State: | Liquid. |
| pH: | Not available. |
| Melting Point / Freezing Point: | Not available. |
| Initial Boiling Point: | < 35 °C (95 °F) (ASTM D86) |
| Boiling Range: | Not available. |
| Flash Point: | < -35 °C (-31 °F) (ASTM D93) |
| Evaporation Rate: | Not available. |
| Flammability (solid, gas): | Not applicable. |
| Lower Flammability Limit: | Not available. |
| Upper Flammability Limit: | Not available. |
| Vapor Pressure: | 60 to 70 kPa at 37.8 °C (100 °F) (ASTM D6377) |
| Vapor Density: | Not available. |
| Relative Density: | 0.910 to 0.930 (Water = 1) at 15 °C (59 °F) (ASTM D5002) |
| Solubilities: | Insoluble in water. |
| Partition Coefficient: n-Octanol/Water: | Not available. |
| Auto-ignition Temperature: | Not available. |
| Decomposition Temperature: | Not available. |



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Viscosity: Not available.
Percent Volatile, wt. %: Not available.
VOC content, wt. %: Not available.
Density: 910 to 930 kg/m³ at 15 °C (59 °F) (ASTM D5002)
Coefficient of Water/Oil Distribution: Not available.

Section 10: STABILITY AND REACTIVITY

Reactivity: Contact with incompatible materials. Sources of ignition. Exposure to heat.
Chemical Stability: Stable under normal storage conditions.
Possibility of Hazardous Reactions: None known.
Conditions to Avoid: Contact with incompatible materials. Sources of ignition. Exposure to heat.
Incompatible Materials: Strong oxidizers.
Hazardous Decomposition Products: Hazardous sulphur dioxide, and related oxides of sulphur may be generated upon combustion.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Product Toxicity

Oral: Not available.
Dermal: Not available.
Inhalation: Not available.

Component Toxicity

| Component | CAS No. | LD ₅₀ oral | LD ₅₀ dermal | LC ₅₀ |
|------------|-----------|-----------------------|-------------------------|------------------------------------|
| Petroleum | 8002-05-9 | 4300 mg/kg (rat) | Not available. | Not available. |
| Sulphur | 7704-34-9 | > 8437 mg/kg (rat) | Not available. | Not available. |
| Hexane | 110-54-3 | 25000 mg/kg (rat) | Not available. | 48000 ppm (rat); 4H |
| Pentane | 109-66-0 | 400 mg/kg (rat) | Not available. | 364000 mg/m ³ (rat); 4H |
| Isopentane | 78-78-4 | Not available. | Not available. | Not available. |
| Heptane | 142-82-5 | Not available. | Not available. | 103000 mg/m ³ (rat); 4H |
| Octane | 111-65-9 | Not available. | Not available. | 118000 mg/m ³ (rat); 4H |
| Benzene | 71-43-2 | 930 mg/kg (rat) | > 9400 µL/kg (rabbit) | 10000 ppm (rat); 7H |
| Toluene | 108-88-3 | 2600 mg/kg (rat) | 14.1 mL/kg (rabbit) | 49000 mg/m ³ (rat); 4H |
| Xylene | 1330-20-7 | 4300 mg/kg (rat) | > 1700 mg/kg (rabbit) | 5000 ppm (rat); 4H |



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| Polycyclic Aromatic Hydrocarbons | 130498-29-2 | Not available. | Not available. | Not available. |
| Hydrogen sulphide | 7783-06-4 | Not available. | Not available. | 444 ppm (rat); 4H |

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion. Skin absorption.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood. Cardiovascular system. Bone marrow. Liver. Kidneys. Reproductive system. Central nervous system. Peripheral nervous system.

Symptoms (including delayed and immediate effects)

Inhalation: Fatal if inhaled. May cause drowsiness or dizziness. May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Excessive inhalation may cause headache, dizziness, confusion, loss of appetite and/or loss of consciousness. This product contains Hydrogen sulphide which may accumulate in confined spaces. Inhalation of Hydrogen sulphide may cause loss of sense of smell, major irritation of the respiratory tract, headache, nausea, vomiting, dizziness, and fluid buildup in the lungs (pulmonary edema), which can be fatal. At 300 ppm unconsciousness may occur after 20 minutes. From 300 to 500 ppm, death can occur within 1 to 4 hours of continuous exposure. At 500 ppm the respiratory system is paralyzed, the victim collapses almost instantaneously, and death can occur after exposure of only 30 to 60 minutes. Above 500 ppm Hydrogen sulphide may cause immediate loss of consciousness; death is rapid, and possibly immediate.

Eye: Causes serious eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. Hydrogen sulphide may cause eye irritation at 1-20 ppm and acute conjunctivitis at higher concentrations. Above 50 ppm H₂S, eye irritation may include symptoms of redness, severe swelling, tearing, sensitivity to light and the appearance of 'Halos' around lights.

Skin: Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion: May be fatal if swallowed and enters airways. May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Skin Sensitization: Not available.

Respiratory Sensitization: Not available.

Medical Conditions Aggravated By Exposure: Not available.

EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood. Cardiovascular system. Bone marrow. Liver. Kidneys. Reproductive system. Central nervous system. Peripheral nervous system.

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Chronic Effects: Hazardous by OSHA/WHMIS criteria. May cause chronic effects. Prolonged or repeated contact may dry skin and cause irritation. High vapour concentrations, generally greater than 10% by volume, may sensitize the heart and lead to lethal cardiac arrhythmias. Repeated dermal application of crude oils in rats produced systemic toxicity in blood, liver, thymus and bone marrow. Chronic inhalation of n-Hexane may cause peripheral nerve disorders and central nervous system effects. Prolonged or repeated inhalation of Isopentane may cause dizziness, weakness, weight loss, anemia, nervousness, pains in the limbs and peripheral numbness. Reports of chronic poisoning with Benzene, Toluene or Xylene describe anemia, decreased blood cell count and bone marrow hypoplasia. Liver and kidney damage may occur. Repeated exposure of the eyes to high concentrations of Xylenes vapour may cause reversible eye damage. Chronic inhalation exposure to xylene causes mid-frequency hearing loss in laboratory animals. Xylene reacts synergistically with n-hexane to enhance hearing loss. Immunodepressive effects have also been reported for Benzene. This product contains Polycyclic Aromatic Hydrocarbons. Prolonged contact with these compounds has been associated with the induction of skin and lung tumours, anemia, disorders of the liver, bone marrow and lymphoid tissues. Hydrogen sulphide may reduce lung function; cause neurological effects such as headaches, nausea, depression and personality changes; eye and mucous membrane irritation; and damage to cardiovascular system.

Carcinogenicity: May cause cancer. Lifetime skin painting studies in animals with whole crude oils and crude oil fractions have produced tumours in animals following prolonged and repeated skin contact. Chronic exposure to benzene has been associated with an increased incidence of leukemia and multiple myeloma (tumour composed of cells of the type normally found in the bone marrow).

Component Carcinogenicity

| Component | ACGIH | IARC | NTP | OSHA | Prop 65 |
|----------------------------------|-------------|-------------|-------------|------------------|-------------|
| Petroleum | Not listed. | Group 3 | Not listed. | OSHA Carcinogen. | Not listed. |
| Benzene | A1 | Group 1 | List 1 | OSHA Carcinogen. | Listed. |
| Toluene | A4 | Group 3 | Not listed. | Not listed. | Not listed. |
| Xylene | A4 | Group 3 | Not listed. | Not listed. | Not listed. |
| Polycyclic Aromatic Hydrocarbons | A2 | Not listed. | List 2 | OSHA Carcinogen. | Listed. |

Mutagenicity: May cause genetic defects.

Reproductive Effects: Suspected of damaging fertility or the unborn child. Studies exist which report a link to crude oil and reproductive effects including menstrual disorders.

Developmental Effects

Teratogenicity: Not available.

Embryotoxicity: Possible risk of harm to the unborn child. Repeated dermal application of crude oils to pregnant rats produced maternal toxicity and fetal developmental toxicity and fetal tumours. Benzene and Xylene have caused adverse fetal effects in laboratory animals. Exposure to

Toluene may affect the developing fetus.

Toxicologically Synergistic Materials: Xylene reacts synergistically with n-hexane to enhance hearing loss.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Petroleum: 21 and 41 mg/l, 96 hr., Rainbow trout;
 Petroleum: 2.7 and 4.1 mg/l, 96 hr., Mysid;
 Petroleum: 122 and 528 ml/kg, 96 hr., Algae.

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.

Mobility in Environment: Not available.

Other Adverse Effects: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT)

Proper Shipping Name: UN3494, PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC, 3 (6.1), PG I

Class: 3 (6.1)

UN Number: UN3494

Packing Group: I

Label Code:



Danger, Possible Hydrogen Sulfide Inhalation Hazard

Canada Transportation of Dangerous Goods (TDG)

Proper Shipping Name: UN3494, PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC, 3 (6.1), PG I, Toxic by inhalation

Class: 3 (6.1)

UN Number: UN3494

Packing Group: I

Label Code:



Toxic by inhalation

Section 15: REGULATORY INFORMATION

Chemical Inventories

US (TSCA)

The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)

The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations

United States

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

| Component | Section 302 (EHS) TPQ (lbs.) | Section 304 EHS RQ (lbs.) | CERCLA RQ (lbs.) | Section 313 | RCRA CODE | CAA 112(r) TQ (lbs.) |
|----------------------------------|------------------------------|---------------------------|------------------|-------------|-------------|----------------------|
| Hexane | Not listed. | Not listed. | 5000 | 313 | Not listed. | Not listed. |
| Pentane | Not listed. | Not listed. | Not listed. | Not listed. | Not listed. | 10000 |
| Isopentane | Not listed. | Not listed. | Not listed. | Not listed. | Not listed. | 10000 |
| Benzene | Not listed. | Not listed. | 10 | 313 | U019 | Not listed. |
| Toluene | Not listed. | Not listed. | 1000 | 313 | U220 | Not listed. |
| Xylene | Not listed. | Not listed. | 100 | 313 | U239 | Not listed. |
| Polycyclic Aromatic Hydrocarbons | Not listed. | Not listed. | Not listed. | 313 | Not listed. | Not listed. |
| Hydrogen sulphide | 500 | 100 | 100 | 313 | U135 | 10000 |

State Regulations

Massachusetts

US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

| Component | CAS No. | RTK List |
|----------------------------------|-------------|----------|
| Petroleum | 8002-05-9 | Listed. |
| Sulphur | 7704-34-9 | Listed. |
| Hexane | 110-54-3 | Listed. |
| Pentane | 109-66-0 | Listed. |
| Isopentane | 78-78-4 | Listed. |
| Heptane | 142-82-5 | Listed. |
| Octane | 111-65-9 | Listed. |
| Benzene | 71-43-2 | E |
| Toluene | 108-88-3 | Listed. |
| Xylene | 1330-20-7 | Listed. |
| Polycyclic Aromatic Hydrocarbons | 130498-29-2 | Listed. |
| Hydrogen sulphide | 7783-06-4 | E |

Note: E = Extraordinarily Hazardous Substance



Crude Oil - Kerrobert Heavy Blend

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SAFETY DATA SHEET

New Jersey

US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

| Component | CAS No. | RTK List |
|-------------------|-----------|----------|
| Petroleum | 8002-05-9 | SHHS |
| Sulphur | 7704-34-9 | Listed. |
| Hexane | 110-54-3 | SHHS |
| Pentane | 109-66-0 | SHHS |
| Isopentane | 78-78-4 | SHHS |
| Heptane | 142-82-5 | SHHS |
| Octane | 111-65-9 | SHHS |
| Benzene | 71-43-2 | SHHS |
| Toluene | 108-88-3 | SHHS |
| Xylene | 1330-20-7 | SHHS |
| Hydrogen sulphide | 7783-06-4 | SHHS |

Note: SHHS = Special Health Hazard Substance

Pennsylvania

US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

| Component | CAS No. | RTK List |
|----------------------------------|-------------|----------|
| Petroleum | 8002-05-9 | Listed. |
| Sulphur | 7704-34-9 | Listed. |
| Hexane | 110-54-3 | Listed. |
| Pentane | 109-66-0 | Listed. |
| Isopentane | 78-78-4 | Listed. |
| Heptane | 142-82-5 | Listed. |
| Octane | 111-65-9 | Listed. |
| Benzene | 71-43-2 | ES |
| Toluene | 108-88-3 | E |
| Xylene | 1330-20-7 | E |
| Polycyclic Aromatic Hydrocarbons | 130498-29-2 | Listed. |
| Hydrogen sulphide | 7783-06-4 | E |

Note: E = Environmental Hazard; S = Special Hazardous Substance

California

California Prop 65:



WARNING This product can expose you to chemicals including n-Hexane, Toluene, Benzene, Ethylbenzene, and Polycyclic Aromatic Hydrocarbons which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.



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Section 16: OTHER INFORMATION

Disclaimer:

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for their own particular use.

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