

**Section 1: IDENTIFICATION**

**Product Name:** Lloyd Heavy Oil

**Synonyms:** CASRN 8002-05-9.

**Product Use:** Motor fuel. Heating fuel.

**Restrictions on Use:** Not available.

**Manufacturer/Supplier:** Harvest Operations Corp.  
Suite 1500, 700-2nd Street SW  
Calgary AB T2P 2W1

**Phone Number:** Main: 403-265-1178  
Toll Free: 1-866-666-1178

**Emergency Phone:** 1-800-760-2826 (Harvest Operations 24-hr Emergency number)  
1-613-996-6666 (CANUTEC)

**Date of Preparation of SDS:** October 2, 2014

**Section 2: HAZARD(S) IDENTIFICATION**

**GHS INFORMATION**

**Classification:** Flammable Liquids, Category 4  
Skin Irritation, Category 2  
Carcinogenicity, Category 1B

**LABEL ELEMENTS**

**Hazard**

**Pictogram(s):**



**Signal Word:** Danger

**Hazard Statements:** Combustible liquid.  
Causes skin irritation.  
May cause cancer.

**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.  
Wash thoroughly after handling.  
Wear protective gloves, protective clothing and eye protection.

**Response:** If on skin: Wash with plenty of soap and water.  
If exposed or concerned: Get medical advice/attention.  
If skin irritation occurs: Get medical advice/attention.  
Take off contaminated clothing and wash it before reuse.  
In case of fire: Use dry chemical, CO<sub>2</sub>, water spray or regular foam to extinguish.

**Storage:** Store in a well-ventilated place. 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).

**Section 3: COMPOSITION / INFORMATION ON INGREDIENTS**

Hazardous Ingredient(s)	Common name / Synonyms	CAS No.	% wt./wt.
Petroleum	Not available.	8002-05-9	100
Sulfur	Sulphur	7704-34-9	3 - 7
Hydrogen sulfide (H <sub>2</sub> S)	Hydrogen sulphide	7783-06-4	< 0.0001
Polycyclic Aromatic Hydrocarbons	Not available.	130498-29-2	variable

**Section 4: FIRST-AID MEASURES**

**Inhalation:** If inhaled: Call a poison center or doctor if you feel unwell.

**Acute and delayed symptoms and effects:** 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 may contain small amounts of 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. Call a poison center or doctor if you feel unwell.

**Acute and delayed symptoms and effects:** May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

**Skin Contact:** If on skin (or hair): Wash with plenty of soap and water. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

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

**Ingestion:** If swallowed: Call a poison center or doctor if you feel unwell. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

**Acute and delayed symptoms and effects:** 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 from a medical practitioner 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

Combustible liquid. When heated, this material may evolve toxic and flammable Hydrogen sulphide.

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

**Sensitivity to Static Discharge:** This material is sensitive to static discharge.

#### MEANS OF EXTINCTION

**Suitable Extinguishing Media:** Small Fire: Dry chemical, CO<sub>2</sub>, water spray or regular foam.

Large Fire: Water spray, fog or regular foam. Move containers from fire area if you can do it without risk.

**Unsuitable Extinguishing Media:** Not available.

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

**Protection of Firefighters:** Fire may produce irritating, corrosive and/or toxic gases. 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). Structural firefighters' protective clothing will only provide limited protection.

### Section 6: ACCIDENTAL RELEASE MEASURES

**Emergency Procedures:** 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).

**Personal Precautions:** 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:** Keep out of drains, sewers, ditches, and waterways.

**Methods for Containment:** Stop leak if without risk. Contain spill and absorb with inert absorbent. Large pools may be covered with foam to prevent vapour evolution. Do not flush to sewer or allow to enter

waterways.

**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. Large spills should be removed with explosion proof vacuum equipment.

**Other Information:** See Section 13 for disposal considerations.

### Section 7: HANDLING AND STORAGE

**Handling:**

Do not swallow. 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. See Section 8 for information on Personal Protective Equipment.

**Storage:**

Store in a well-ventilated place. 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/m<sup>3</sup> (TWA);  
400 ppm (TWA) [Vacated];

Sulphur [CAS No. 7704-34-9]

**ACGIH:** 10 mg/m<sup>3</sup> (TWA) (Inhalable.); 3 mg/m<sup>3</sup> (TWA) (Respirable.); For Particles (Insoluble or Poorly Soluble) Not Otherwise Specified

**OSHA:** 15 mg/m<sup>3</sup> (Total dust) (TWA), 5 mg/m<sup>3</sup> (Respirable fraction) (TWA); For Particulates Not Otherwise Regulated (PNOR).

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];

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/m<sup>3</sup> (TWA); For benzene-soluble fraction.

**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. 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.

**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**

<b>Appearance:</b>	Brown liquid.
<b>Colour:</b>	Brown.
<b>Odour:</b>	Petroleum.
<b>Odour Threshold:</b>	Not available.
<b>Physical State:</b>	Liquid.
<b>pH:</b>	Not available.
<b>Melting Point / Freezing Point:</b>	Not available.
<b>Initial Boiling Point:</b>	155.7 °C (312.3 °F) (ASTM D86)

<b>Boiling Range:</b>	155.7 °C (312.3 °F) (ASTM D86) to 716.4 °C (1321.5 °F) (ASTM D7169)
<b>Flash Point:</b>	90 °C (194 °F) (ASTM D93)
<b>Evaporation Rate:</b>	Not available.
<b>Flammability (solid, gas):</b>	Not applicable.
<b>Lower Flammability Limit:</b>	Not available.
<b>Upper Flammability Limit:</b>	Not available.
<b>Vapor Pressure:</b>	< 10 kPa at 37.8 °C (100 °F)
<b>Vapor Density:</b>	Not available.
<b>Relative Density:</b>	0.9840 to 0.9960 (Water = 1) at 15 °C (59 °F) (ASTM D5002)
<b>Solubilities:</b>	Insoluble in water.
<b>Partition Coefficient: n-Octanol/Water:</b>	Not available.
<b>Auto-ignition Temperature:</b>	Not available.
<b>Decomposition Temperature:</b>	Not available.
<b>Viscosity:</b>	1700 to 4700 cSt at 40 °C (104 °F) (Brookfield)
<b>Percent Volatile, wt. %:</b>	Not available.
<b>VOC content, wt. %:</b>	Not available.
<b>Density:</b>	980 to 1000 kg/m <sup>3</sup> at 15°C (59 °F) (ASTM D5002)
<b>Coefficient of Water/Oil Distribution:</b>	Not available.
<b>API Gravity:</b>	10 to 15 at 15 °C (59 °F) (ASTM D5002)
<b>Pour Point:</b>	5 to 20 °C (48.2 to 59 °F) (ASTM D5853)

<b>Section 10: STABILITY AND REACTIVITY</b>
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<b>Reactivity:</b>	Contact with incompatible materials. Sources of ignition. Exposure to heat.
<b>Chemical Stability:</b>	Stable under normal storage conditions.
<b>Possibility of Hazardous Reactions:</b>	None known.
<b>Conditions to Avoid:</b>	Contact with incompatible materials. Sources of ignition. Exposure to heat.
<b>Incompatible Materials:</b>	Strong oxidizers.
<b>Hazardous Decomposition Products:</b>	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 <sub>50</sub> oral	LD <sub>50</sub> dermal	LC <sub>50</sub>
Petroleum	8002-05-9	4300 mg/kg (rat)	Not available.	Not available.
Sulphur	7704-34-9	> 8437 mg/kg (rat)	Not available.	Not available.
Hydrogen sulphide	7783-06-4	Not available.	Not available.	444 ppm (rat); 4H
Polycyclic Aromatic Hydrocarbons	130498-29-2	Not available.	Not available.	Not available.

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

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

**Symptoms (including delayed and immediate effects)**

**Inhalation:** 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 may contain small amounts of 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:** May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

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

**Ingestion:** 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** Not available.

**Aggravated By Exposure:**

**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. Reproductive system. Central nervous system.

**Chronic Effects:** Prolonged or repeated contact may dry skin and cause irritation. Repeated dermal application of crude oils in rats produced systemic toxicity in blood, liver, thymus and bone marrow. Hydrogen sulphide may reduce lung function; cause neurological effects such as headaches, nausea, depression and personality changes; eye and mucous membrane irritation: damage to cardiovascular system. 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.

**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. This material contains Polycyclic Aromatic Hydrocarbons (PAHs), some of which are animal carcinogens.

**Component Carcinogenicity**

Component	ACGIH	IARC	NTP	OSHA	Prop 65
Petroleum	Not listed.	Group 3	Not listed.	OSHA Carcinogen.	Not listed.
Polycyclic Aromatic Hydrocarbons	A2	Not listed.	List 2	OSHA Carcinogen.	Listed.

**Mutagenicity:** Not available.

**Reproductive Effects:** Not available. Studies exist which report a link to crude oil and reproductive effects including menstrual disorders.

**Developmental Effects**

**Teratogenicity:** Not available.

**Embryotoxicity:** Not available. Repeated dermal application of crude oils to pregnant rats produced maternal toxicity and fetal developmental toxicity and fetal tumours.

**Toxicologically Synergistic Materials:** Not available.

**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:** NA1993, COMBUSTIBLE LIQUID, N.O.S. (Petroleum Crude Oil), Combustible liquid, PG III

**Class:** Combustible liquid.

**UN Number:** NA1993

**Packing Group:** III

**Label Code:**



**Canada Transportation of Dangerous Goods (TDG)**

**Proper Shipping Name:** Not regulated.

**Class:** Not applicable.

**UN Number:** Not applicable.

**Packing Group:** Not applicable.

**Label Code:** Not applicable.

**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**

**Canada**

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

**WHMIS Classification:** Class B3 - Combustible Liquids.  
Class D2A - Carcinogenicity.  
Class D2B - Skin irritant.

**Hazard Symbols:**





**Lloyd Heavy Oil**

**SAFETY DATA SHEET / MATERIAL SAFETY DATA SHEET**

Date of Preparation: October 2, 2014

**United States**

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

**SARA Title III**

<b>Component</b>	<b>Section 302 (EHS) TPQ (lbs.)</b>	<b>Section 304 EHS RQ (lbs.)</b>	<b>CERCLA RQ (lbs.)</b>	<b>Section 313</b>	<b>RCRA CODE</b>	<b>CAA 112(r) TQ (lbs.)</b>
Hydrogen sulphide	500	100	100	313	U135	10000
Polycyclic Aromatic Hydrocarbons	Not listed.	Not listed.	Not listed.	313	Not listed.	Not listed.

**State Regulations**

**Massachusetts**

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

<b>Component</b>	<b>CAS No.</b>	<b>RTK List</b>
Petroleum	8002-05-9	Listed.
Sulphur	7704-34-9	Listed.
Hydrogen sulphide	7783-06-4	E
Polycyclic Aromatic Hydrocarbons	130498-29-2	Listed.
Benzene	71-43-2	E

**Note:** E = Extraordinarily Hazardous Substance

**New Jersey**

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

<b>Component</b>	<b>CAS No.</b>	<b>RTK List</b>
Petroleum	8002-05-9	SHHS
Sulphur	7704-34-9	Listed.
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)

<b>Component</b>	<b>CAS No.</b>	<b>RTK List</b>
Petroleum	8002-05-9	Listed.
Sulphur	7704-34-9	Listed.
Hydrogen sulphide	7783-06-4	E
Polycyclic Aromatic Hydrocarbons	130498-29-2	Listed.

**Note:** E = Environmental Hazard

**California**

**California Prop 65:** WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

<b>Component</b>	<b>Type of Toxicity</b>
Polycyclic Aromatic Hydrocarbons	cancer
Benzene	cancer; developmental, male
Toluene	developmental; female
Ethylbenzene	cancer

**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 his own particular use.

**Date of Preparation of SDS:** October 2, 2014  
**SDS Expiry Date (Canada):** October 1, 2017  
**Version:** 1.1  
**GHS SDS Prepared by:** Deerfoot Consulting Inc.  
**Phone:** (403) 720-3700