



Safety Data Sheet (U.S.)




Black wax crude oil

1.0 Identification

GHS product identifier: Crude oil (Black wax crude oil)	Version #: 1
Synonyms: Black wax oil, Utah crude, Crude petroleum, Utah black crude, Black crude	Issue date: 09/09/2019
CAS #: 8002-05-9 (Crude oil)	
Recommended use: Process stream, fuels, and lubricants production	
Recommended restrictions: Use in accordance with this SDS.	
Manufacturer: Encana Oil & Gas (USA), Inc., 370 17 th Street, Suite 1700, Denver, CO 80202	
Emergency phone #: 800-262-8200 or 911	Email: SDS@encana.com

2.0 Hazard identification

GHS classification & label elements

Signal word: Danger			
Type of Hazard		Category	Hazard Symbol
Physical Hazards	Flammable liquids	3	
Health Hazards	Germ cell mutagenicity Carcinogenicity Specific target organ toxicity, single exposure Specific target organ toxicity, repeat exposure Aspiration hazard	2 1A 3 2 1	
Environmental Hazards	Chronic toxicity to the aquatic environment	2	

Hazard Statement

- Flammable liquid and vapor.
- May be fatal if swallowed and enters airways.
- Causes mild skin irritation.
- Causes serious eye irritation.
- May cause respiratory irritation (respiratory tract).
- May cause drowsiness or dizziness.
- Suspected of causing genetic defects.
- May cause cancer.

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- May cause damage to organs (liver, kidneys, blood, nervous system, and skin) through prolonged or repeated exposure.
- Harmful to aquatic life.
- Very toxic to aquatic life with long lasting effects (long-term, chronic).

Precautionary Statement

- 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/hot surfaces. No smoking.
 - Keep container tightly closed.
 - Keep cool.
 - Ground/bond container and receiving equipment.
 - Use explosion-proof electrical/ventilating/lighting equipment.
 - Use only non-sparking tools.
 - Take precautionary measures against static discharge.
 - Do not breathe gas/mist/vapors/spray.
 - Do not eat, drink, or smoke when using this product.
 - Avoid release to the environment.
 - Wear protective gloves/protective clothing/eye protection/face protection.
- Response
 - If swallowed, immediately call POISON CENTER or doctor/physician.
 - If on skin or hair, wash with plenty of soap and water. Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
 - If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing.
 - If exposed or concerned, get medical advice/attention.
 - Call poison center/doctor if you feel unwell.
 - Specific treatment (see first aid instructions on this SDS)
 - Do NOT induce vomiting.
 - If skin irritation occurs, get medical advice/attention.
 - Take off contaminated clothing and wash before reuse.
 - In case of fire, use water spray, fog, or firefighting foam.
 - Collect spillage.
- Storage
 - Store in a well-ventilated place.
 - Keep container tightly closed.
 - Keep cool.
 - Store locked up.
- Disposal
 - Dispose of contents/container in accordance with local/regional/national/international regulations.
- Hazards not otherwise classified
 - Flammable gases can be entrained in storage vessels or tanks as the liquid fuel evaporates and emits vapors. These vapors can cause health effects and create physical hazards such as flash fires or even explosions.

3.0 Composition/information on ingredients

Components	CAS #	Percent (weight)
Petroleum crude oil	8002-05-9	100%
Gasoline distillates	8006-61-9	<15-19%
Jet fuel distillates	8008-20-6	<7-11%
Diesel fuel distillate	68334-30-5	<5-9%
Benzene	71-43-2	Variable
Propane	74-98-6	Variable

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Hydrogen sulfide	7783-06-4	Variable
Ethane	74-84-0	Variable
Methane	74-82-8	Variable
n-Hexane	110-54-3	Variable
Pentane	109-66-0	Variable
Butane	106-97-8	Variable
Xylenes	1330-20-7	Variable
Toluene	108-88-3	Variable
Ethylbenzene	100-41-4	Variable
Polynuclear aromatic hydrocarbons	N/A	Variable

4.0 First aid measures

First aid procedures

- **Inhalation:** Inhalation of vapor may irritate the nose, throat, and respiratory tract. Coughing, sneezing, and shortness of breath may occur following exposure. Inhalation may cause rapid heart rate, headaches, confusion, anemia, dizziness and drowsiness. Possible asphyxiation hazards could occur from hydrogen sulfide, methane and other gases.
 - Remove person to fresh air. If person is not breathing, provide artificial respiration, CPR or oxygen. If necessary, provide additional oxygen once breathing is restored, person applying oxygen should be trained to do so. Person should seek medical attention immediately from a physician should irritation persist or develop at a later time.
- **Eye contact:** Direct contact with liquid or vapor may cause irritation or burn the eyes.
 - Immediately flush eyes with clean water for fifteen (15) minutes while holding open the eyelids. Lift eyelids to ensure rinsing. Beyond flushing, seek medical attention from a physician.
- **Ingestion:** Ingestion is extremely irritating to mouth, throat, and gastrointestinal tract. May cause excitation, loss of consciousness, convulsion, cyanosis, congestion, and capillary hemorrhaging of the lungs and internal organs.
 - Seek emergency medical attention immediately. Never attempt to make an unconscious person, or person of limited awareness drink or vomit. **DO NOT INDUCE VOMITING.** If vomiting is occurring, lean victim forward, trying to keep them sitting at rest and comfortable. Monitor breathing, if person is conscious and fully aware, allow victim to rinse their mouth with water until taste and material has been removed.
- **Dermal:** Direct contact with skin may cause irritation.
 - Wash with soap and water. Remove contaminated clothing and decontaminate clothing before wearing again. Seek medical attention from a physician if irritation should persist or redness develops at a later time. Thermal burns require immediate medical attention depending on the area of the body burned and the severity.

5.0 Fire-fighting measures

Flammable properties

- Vapors may be ignited quickly when exposed to sources of ignition (open flame, heat, spark, and others).
- Vapors can burn openly or explode in confined spaces when mixed with air and exposed to ignition source.
- Flash back may occur with vapors traveling an extended distance to an ignition source due to their density. Some vapors present may be lighter or heavier than air.
- See Sections 9 and 10 for physical/chemical and stability/reactive properties.
- NFPA: Health 2, Flammability 3, Instability: 0.

Extinguishing media

Suitable	Do not use
<ul style="list-style-type: none"> • For large fires <ul style="list-style-type: none"> ○ Water spray. Water may be ineffective for fighting the fire but may be used to cool fire-exposed containers. ○ Fog 	<ul style="list-style-type: none"> • Water jet, which will spread the fire

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<ul style="list-style-type: none"> ○ Firefighting foam ● For small fires <ul style="list-style-type: none"> ○ Any extinguisher suitable for Class B fires, dry chemical, CO₂, water spray, firefighting foam, or gaseous extinguishing agent may be used. 	
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Protection of fire-fighters

Specific hazards arising from product	Protective equipment and precautions
<ul style="list-style-type: none"> ● Small fires in the early stage may be able to be extinguished using a handheld fire extinguisher or other firefighting equipment. ● For massive fires the use of unmanned hose holders or monitor nozzle 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. 	<ul style="list-style-type: none"> ● Fire-fighters should wear appropriate protective equipment and a self-contained breathing apparatus (SCBA) with full-face piece operated in positive pressure mode if fighting fire in poorly ventilated area.

Fire-fighting equipment/instructions

- Evacuate area and fight fire from a safe distance.
- Evacuate area.
- Water spray should be used to cool containers.
- Containers can burst violently when heated, due to excess pressure build-up.

6.0 Accidental release measures

- Personal precautions:
 - Response and clean-up personnel must be properly trained in spill response and clean-up.
 - Avoid direct contact with material; use the personal protective equipment specified in Section 8.
 - Personnel must utilize proper personal protective equipment (PPE) and engineering controls where applicable.
- Emergency procedures: If safe to do so,
 - Carefully contain and stop the source of spill.
 - Evacuate nonessential personnel and remove or secure all ignition sources.
 - Stay upwind if possible to consider potential exposure to vapors as product may release a substantial amount of potentially toxic and flammable vapors.
 - If possible, remove heat and potential ignition sources to lessen the risk of fire.
 - Consider the direction the spilled product is moving/flowing; place damming or diking materials to prevent the product from entering sewers, waterways, drains, and confined areas.
 - Provide explosion-proof clearing ventilation, if possible. Use a LEL meter and H₂S (or 4-gas) meter to determine air quality in area.
 - Should a release of this product enter a US waterway and cause a film or sheen, the National Response Center must be notified within 24 hours at 800-424-8802.
- Methods for cleaning up: If safe to do so,
 - Carefully contain and stop the source of spill.
 - Pump or vacuum residual liquids into appropriate tanks or containers for recycle or disposal.
 - Collect oil and oil impacted soils, debris, and stage in approved DOT containers or on suitable liner material for staging and classification for recycle or disposal.
 - Use oil absorbing materials to soak up spill if small and contained.
 - Carefully shovel, scoop, or sweep up absorbed materials into a preferential waste container or approved DOT container for reclamation or disposal.
 - Oil and oil impacted materials recovered in cleanup operations should be disposed of in accordance with any applicable laws, regulation or requirements.

7.0 Handling and storage

Safe handling precautions

- Crude oil is a flammable liquid and should be handled as such.
- Liquid fuel can evaporate and emit gaseous vapors. These vapors can cause health effects and create physical hazards such as flash fires or even explosions.
- Avoid contact with product and avoid inhalation.
- Keep away from heat, sparks, and open flame.
- Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.
- Transfer equipment should be fixed with self-closing valves, pressure vacuum bungs, and flame arrestors.
- Empty containers may contain residue of liquid or vapor and can be dangerous.
- Do not pressurize, cut, weld, drill or expose these containers to potential sources of ignition, as they may explode and cause injury or death.
- Always wear appropriate personal protective equipment when handling product.
- Wash hands and face after handling and before eating, drinking, or smoking.
- HMIS: Health: 2, Flammability: 3, Physical hazards: 0

Conditions for safe storage including incompatibilities

- Store in a well-ventilated, cool, dry place away from heat, sunlight, hot surfaces, or other sources of ignition.
- Use only approved containers for storage and transport.
- Keep incompatible materials away.
- Crude oil is incompatible with strong oxidizers (Section 10).

8.0 Exposure controls/personal protection

Occupational exposure limits

Component	Limit type	OSHA PEL	ACGIH TLV	NIOSH REL
Benzene CAS # 71-43-2	STEL	25 ppm	2.5 ppm	1 ppm
	TWA	10 ppm*	0.5 ppm	0.1 ppm
Hydrogen sulfide CAS # 7783-06-4	STEL	20 ppm*	1 ppm	10 ppm
	TWA	None	5 ppm	None
Pentane CAS # 109-66-0	STEL	None	None	610 ppm
	TWA	1000 ppm	1000 ppm	120 ppm
n-Hexane CAS # 110-54-3	STEL	None	None	None
	TWA	500 ppm	50 ppm	50 ppm
Butane CAS # 106-97-8	STEL	None	1000 ppm	None
	TWA	None	None	800 ppm
Xylenes CAS# 95-47-6	STEL	None	150 ppm	150 ppm
	TWA	100 ppm	100 ppm	100 ppm
Ethylbenzene CAS# 100-41-4	STEL	None	None	125 ppm
	TWA	100 ppm	20 ppm	100 ppm
Toluene CAS# 108-88-3	STEL	300 ppm (C)	None	150 ppm
	TWA	200 ppm	20 ppm	100 ppm

*Value from OSHA Table Z-2.

Engineering controls

- Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.
- Provide explosion-proof clearing ventilation, if possible.
- Gas monitors should be used to assess exposure.
- Multi-gas meters should be properly maintained and properly calibrated before use.
- Personnel utilizing gas monitoring equipment should be trained prior to use.

Personal protective equipment

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- **Eye face protection:** Safety glasses or goggles re recommended when splashing or spraying is a possibility.
- **Skin protection:** Wear gloves constructed of nitrile or neoprene are recommended at a minimum. Other job-specific gloves may be required.
- **Respiratory protection:**
 - 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 recommended exposure limits.
 - Only properly trained, fit-tested, personnel should be in areas that require the use of a respirator.
 - Protection provided by air-purifying respirators is limited.
 - The use of positive pressure, air-supplied respirators may be necessary if there is a potential for release or in oxygen-deficient atmospheres.
 - Air-supplied respirators should especially be used if exposure levels are unknown or any other circumstance where an air-purifying respirator may not provide the adequate protection.
 - Respirator should also comply with OSHA requirements of personnel working with hazardous materials.
 - OSHA requires personnel to be respirator trained, this training includes fit testing, medical clearance, repair and cleaning, and other requirements.

9.0 Physical and chemical properties

Physical state	Liquid
Color	Varies from light brown to black
Odor	Characteristics of petroleum scent
pH	Not applicable
Melting point/freezing point	MP not determined. FP <-62.7°C(-81°F)
Initial boiling point	-58.8°C (138°F)
Flash point	<28.8-37.7°C (84-100°F)
Lower explosive limit (by volume)	Variable
Upper explosive limit (by volume)	Variable
Vapor pressure	Variable
Vapor density	1.5-3.0 (estimated)
Relative density	Variable
Solubility	Soluble in hydrocarbon solvents. Insoluble in water
Partition coefficient (n-octanol/water)	<0.1 (estimated)
Auto-ignition temperature	Not determined
Decomposition temperature	Not available
Viscosity	Not available

10.0 Stability and reactivity

Chemical stability: Stable at normal anticipated storage and handling temperatures and pressures. Crude oil is an extremely flammable liquid and vapors from it can cause flash fire. Store the product in a well-ventilated, cool, dry place away from heat, sunlight, hot surfaces or other sources of ignition. Use only approved containers for storage and transport. Crude oil will react with strong oxidizers.

Possibility of hazardous reactions: Volatility of vapors can flash fires. Buildup of vapors is known to contribute to fires and may potentially cause explosions.

Conditions to avoid: Avoid high temperatures and all possible sources of ignition: open flames, sparks, welding, and smoking. Prevent vapor accumulation. Do not store in improper containers. Keep incompatible materials from crude oil, as it is incompatible with strong oxidizers.

Incompatible materials: Keep away from strong oxidizers such as acids, alkalis, chlorine and halogens, dichromates or permanganates, which may cause fire or explosion.

Hazardous decomposition products: Hazardous decomposition products are not expected with normal storage. The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of combustion products: carbon

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monoxide, carbon dioxide, sulfur and nitrogen, benzene and other hydrocarbons. Combustion can yield low oxygen levels. Other potential decomposition products include sulfur oxides, nitrogen oxides, and airborne particulates.

11.0 Toxicological information

Routes of exposure

- **Ingestion:** Ingestion may cause irritation to mouth, throat, and gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system effects similar to that of alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur along with other long-term health effects.
- **Inhalation:** Inhalation of vapor may irritate the nose, throat and respiratory tract. Coughing, sneezing, and shortness of breath may occur following exposure. Inhalation may cause rapid heart rate, headaches, confusion, anemia, dizziness, and drowsiness. Possible asphyxiation hazards could occur from hydrogen sulfide, methane and other vapors.
- **Skin contact:** Direct contact with skin may cause irritation.
- **Eye contact:** Direct contact with liquid or vapor may cause irritation or burn the eyes.

Toxicological effects

- **Acute effects:** Suffocation (asphyxiant) hazard – if allowed to accumulate to concentrations that reduce oxygen levels below safe breathing levels. Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite.
- **Chronic effects:** Prolonged or repeated exposure to high concentrations may affect the central nervous system.

Chronic effects:

- Due to the presence of benzene, long term exposure may increase the risk of anemia and leukemia. Repeated skin contact may increase the risk of skin cancer. Benzene, a constituent present in petroleum crude, is listed with IARC as Group 1, known carcinogen to human. The NTP lists benzene as a Select Carcinogen: Known Human Carcinogen. Similarly, OSHA and ACGIH also list benzene as a carcinogen to humans.
- The evaluation of Petroleum Crude Oil by IARC concluded there is “inadequate evidence for the carcinogenicity in humans of crude oil” and that there is “limited evidence for the carcinogenicity in experimental animals of crude oil” and because of this, crude oil is “not classifiable as to its carcinogenicity to humans”, Group 3. Similar evaluations have also been conducted by ACGIH, OSHA, and NTP. Crude oil is not listed as a carcinogen with NTP, OSHA, or ACGIH.

Component toxicity

Component	LD ₅₀ oral	LD ₅₀ dermal	LC ₅₀
Petroleum distillates/naphtha (8002-05-9)	>4,300 mg/kg (rat)	>2,000 mg/kg (rabbit)	>4,300 ppm (rat)
Benzene (71-43-2)	930 mg/kg (rat)	>9,400 µL/kg (rabbit)	10,000 ppm (7-hour, inhalation, rat)
Toluene (108-88-3)	2,600 mg/kg (rat)	14.1 mL/kg (rabbit)	49,000 mg/m ³ (4-hour, inhalation, rat)
Xylenes (95-47-6)	4,300 mg/kg (rat)	>1,700 mg/kg (rabbit)	5,000 ppm (4-hour, inhalation, rat)
Ethylbenzene (100-41-4)	3,500 mg/kg (rat)	17,800 µL/kg (rabbit)	Not available
Methane (74-82-8)	Not available	Not available	326,000 mg/m ³ (2-hour, inhalation, mouse)
Hydrogen sulfide (7783-06-4)	Not available	Not available	444 ppm (4-hour, inhalation, rat)

12.0 Ecological information

Ecotoxicity: Keep product out of sewers, drainage areas and waterways. All spills and releases should be reported where applicable under appropriate regulations. When any release to the environment occurs, components of the crude oil will divide

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or partition into various environmental compartments. Components with the lower molecular weights may dissolve in water or volatilize to the atmosphere. Components of intermediate fractions may float on or spread out in water, where the fractions may form emulsions, or adsorb into soil and other sediments. Viscous components or component with heavier or higher molecular weights may amass together and float or sink in water or stick to soil and sediment. The rate at which this occurs is completely reliant on the make-up of the crude.

Persistence and degradability: Crude oils are subject to biodegradation, but biodegradation rates vary considerably, and crude oils are not considered "readily biodegradable".

Mobility in Soil: Low molecular weight aliphatic and aromatic components of crude are generally expected to have a high rate of mobility in soil. Heavier molecular weighted components are expected to have a lesser rate of mobility in soil.

Bioaccumulative potential:

- Polycyclic aromatic hydrocarbons (PAHs) found in crude oil can be highly toxic to zooplankton and can be accumulated and moved-up throughout the food webs. According to MARPOL 73/78 ANNEX I, crude oil is considered a Marine Pollutant and based on studies is considered toxic to marine life.
- Petroleum distillates/naphtha (8002-05-9) (USEPA 2011):
 - LC₅₀ for fish ranges 0.73-42 mg/L (96-hour)
 - EC₅₀ aquatic invertebrates 0.61-28 mg/L (48-hour)
 - Chronic toxicity to aquatic invertebrates from 0.5-6 mg/L (21-day)

Other adverse effects: Numerous studies have been conducted on various types of crude oil to determine its effects on the environment. Limited studies have been conducted on formation-specific yellow wax crude oil to determine its effects on the environment. In general, crude oil releases can have negative effects on marine ecological environments, as well as the terrestrial environment, to what degree is dependent on the make-up of the crude oil and the size of release.

13.0 Disposal considerations

It is the responsibility of the user to determine if the material is considered hazardous for disposal under federal, state, and local regulations.

14.0 Transportation information

US DOT

UN number	1267
UN proper shipping name	Petroleum Crude Oil
Transport hazardous class	3
Packing group	III
Environmental hazards: Marine pollutant	Yes
Labels required	3
Packaging exceptions	150
Packaging non-bulk	202
Packaging bulk	242
Special precautions for the user	Read safety instructions, SDS, and emergency procedures before handling.

IATA

UN number	1267
UN proper shipping name	Petroleum Crude Oil
Transport hazardous class(es)	3
Packing group	III
Environmental hazards	Yes
Label required	3
ERG code	3L
Special precautions for the user	Read safety instructions, SDS, and emergency procedures before handling.

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IMDG

UN number	1267
UN proper shipping name	Petroleum Crude Oil
Transport hazardous class(es)	3
Packing group	III
Environmental hazards: Marine pollutant	Yes
Label required	3
EmS	F-E, S-E
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable. However, this product is a liquid and, if transported in bulk, is covered under MARPOL 73/78 Annex I.
Special precautions for the user	Read safety instructions, SDS, and emergency procedures before handling.

15.0 Regulatory information

U.S.

OSHA	This product is a hazardous chemical, as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
TSCA	This product is not listed in the TSCA chemical inventory.
SARA Section 302	This product contains hydrogen sulfide which has been listed on the EPA's extremely hazardous substance list.
SARA Section 304	This product may contain the following component(s) which in the event of a spill may be subject to SARA reporting requirements: benzene, ethyl benzene toluene, xylene, n-hexane.
SARA Section 311/312	The following categories apply to this product: Acute health hazard, Chronic health hazard, Fire hazard.
SARA Section 313	This product may contain the following component(s) which may be subject to reporting on a toxic release inventory: benzene, ethyl benzene, toluene, n-hexane, xylene.
EPA Clean Water Act	Spills into or leading to surface waters that cause a sheen must be reported to the National Response Center, 800-424-8802.

International inventories

Country or region	Inventory name	On inventory (Yes/No)
Australia	Australian inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes

16.0 Other information, including date of preparation of last version

Issue date: 09/09/2019

Version #: 1

References: IARC Monographs. Overall Evaluation of Carcinogenicity (Volumes 1-102) IUCLID. Hazardous Substances Data Bank.

Disclaimer: This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.