



## Safety Data Sheet

MSDS ID NO: 011

Revision date: April 2014

### Section 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product name:** Petroleum Crude Oil Solution  
**Synonyms:** Earth oil, petroleum oil, rock oil  
**Chemical family:** Petroleum hydrocarbon mixture  
**Formula:** Crude oil is a complex mixture of paraffinic, cycloparaffinic and aromatic hydrocarbons covering carbon numbers ranging from C<sub>1</sub> to over C<sub>60</sub>. It is amber to black in color.

**Producer:** EnLink Midstream, L.P.  
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Dallas, TX 75201  
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<b>Emergency Line</b>	<b>866-394-9839</b>	<b>Available 24 hours</b>
<b>CHEMTREC</b>	<b>800-424-9300</b>	
<b>EnLink</b>	<b>214-953-9500</b>	<b>Available during normal business hours</b>

**\*\*Ask for Compliance Dept\*\***

### Section 2. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

Crude oil is a volatile and extremely flammable liquid. Keep away from heat, flame and sources of ignition. This material can contain toxic levels of hydrogen sulfide vapor that accumulate in the vapor spaces of storage and transport compartments. Hydrogen sulfide vapor can cause eye, skin and respiratory tract irritation. This product may contain benzene, which may cause cancer or damage blood-forming organs. Aspiration (inadvertent suction) of liquid into the lungs can produce chemical pneumonia or even death.

#### OSHA-GHS Hazard Statements:

**DANGER! — Highly Flammable Liquid and Vapor**

**Inhalation:** Volatile components of this product can cause respiratory and nasal irritation, headache, dizziness, drowsiness, nausea and loss of coordination. Significant concentrations of hydrogen sulfide gas can be present in the vapor space of storage tanks and bulk transport compartments. With the loss of highly volatile components, weathered oil does not present an inhalation hazard.

**Ingestion:** May cause irritation of the mouth, throat and gastrointestinal tract, leading to nausea, vomiting, headache, dizziness, drowsiness and diarrhea. Minute amounts aspirated into the lungs can produce chemical pneumonitis, pulmonary edema or lung injury, which in severe cases may be fatal.

**Skin contact:** Moderate skin irritation may occur upon short-term exposure. Prolonged or repeated liquid contact can cause dermatitis, folliculitis or oil acne.

**Eye contact:** May cause slight irritation.

**Carcinogenic evaluation:** The International Agency for Research on Cancer (IARC) has determined there is limited evidence for the carcinogenicity of crude oil in animals. The IARC has determined there is inadequate evidence of carcinogenicity of crude oil in humans. Crude oil is not classifiable as to its carcinogenicity to humans (Group 3).

Name	IARC carcinogens:	NTP carcinogens:	ACGIH — carcinogens	OSHA — select carcinogens
<b>Benzene 71-43-2</b>	Supplement 7 (1987) Monograph 29 (1982)	Known human carcinogen listed	A1 — Confirmed human carcinogen	Present

### Section 3. COMPOSITION / INFORMATION ON INGREDIENTS

Crude oil is a complex mixture of paraffinic, cycloparaffinic and aromatic hydrocarbons covering carbon numbers ranging from C<sub>1</sub> to over C<sub>60</sub>. It is amber to black in color. Crude oil contains small amounts of sulfur, nitrogen and oxygen compounds as well as trace amounts of heavy metals. The most prevalent constituents of crudes from various localities are provided below. This is not a complete list of all components. Other components may be present in concentrations of less than 1%, or carcinogens present in concentrations of less than 0.1%.

Material information:

Name	CAS No.	Weight %
<b>N-decane and decanes</b>	872-05-9	4-10
<b>N-pentane and isomers</b>	109-66-0; 78-78-4	2-7
<b>N-heptane</b>	142-82-5	2-5
<b>N-hexane</b>	110-54-3	1-5
<b>N-octane and isomers</b>	111-65-9; 540-84-1	1-5
<b>N-nonane</b>	111-84-2	1-5
<b>N-butane and isomers</b>	106-97-8	1-5
<b>Methylcyclohexane</b>	108-87-2	1-4
<b>Dimethylpentanes</b>	Mixture	1-3
<b>1,2,4-trimethylbenzene</b>	95-63-6	0-2
<b>Toluene</b>	108-88-3	0-2
<b>Benzene</b>	71-43-2	0-1

*Note: The above weight percentages are represented in ranges as estimates. Due to variations in source locations, components of crude oil will vary.*

### Section 4, FIRST AID MEASURES

**Inhalation:** Remove the affected person to fresh air; if the affected person is not breathing or breathing is irregular, provide artificial respiration, CPR and/or oxygen by trained personnel and seek emergency medical attention.

**Skin contact:** Remove contaminated clothing; wash affected area with soap and water; launder contaminated clothing before reuse. If irritation persists, seek medical attention.

**Ingestion:** Aspiration hazard if swallowed. DO NOT induce vomiting; if vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs; seek immediate medical attention. Vomiting may be induced only under the supervision of a physician.

**Eye contact:** Check for and remove contact lenses. Flush eyes with clear, tepid running water for 15 minutes while holding eyelids open. If symptoms or irritation persist, seek medical attention.

## Section 5. FIREFIGHTING MEASURES

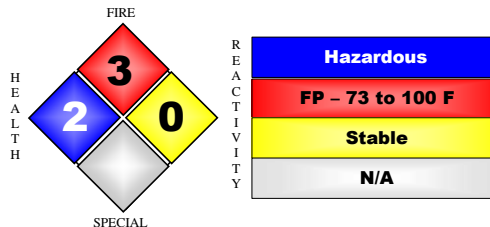
**Suitable extinguishing media:** Small fires — Class B fire-extinguishing media such as CO<sub>2</sub>, dry chemical, foam (AFFF/ATC) or water spray can be used. Large fires — water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

**Specific hazards:** This product has been determined to be a flammable liquid per the OSHA Hazard Communication Standard and should be handled accordingly. Vapors may travel along the ground or be moved by ventilation and ignited by many sources such as pilot lights, sparks, electric motors, static discharge or other ignition sources at locations distant from material handling. Flashback can occur along vapor trail. For additional fire-related information, see NFPA 30 or the North American Emergency Response Guide 115.

**Special protective equipment for firefighters:** Avoid using straight water streams. Water may be ineffective in extinguishing low flash point fires but can be used to cool exposed surfaces. Avoid excessive water spray application. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Keep runoff water out of sewers and water sources.

**NFPA rating:**

**Health:** 2  
**Flammability:** 3  
**Instability/reactivity:** 0  
**Other:** N/A



## Section 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:** STEPS TO BE TAKEN IN THE EVENT MATERIAL IS RELEASED OR SPILLED: Immediately contact emergency personnel. See Section 8 for minimum personal protective equipment (PPE). Additional PPE may be necessary; consult a specialist before handling this product. Evacuate and ventilate area; confine and absorb into absorbent material; place material into approved containers for disposal. For spills in excess of allowable quantities (RQ), notify the National Response Center at (800) 424-8802. Refer to CERCLA 40 CFR and SARA Title III, Section 313 40 CFR 372 for detailed instructions concerning reporting requirements.

## Section 7. HANDLING AND STORAGE

**Handling:** Keep container closed when not in use. Protect containers from abuse and extreme temperatures. Keep away from all sources of ignition. Empty containers may contain residue that may form explosive or toxic vapors. Do not weld or cut near empty container. Use non-sparking tools when opening and closing containers. Maintain well-ventilated work areas to minimize exposure when handling this material. Comply with all applicable EPA, OSHA, NFPA and consistent state and local requirements. Use appropriate grounding and bonding practices.

Avoid skin contact. Exercise good personal hygiene, including removal of soiled clothing and prompt washing with soap and water.

**Storage:** Hydrocarbons are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering and pumping at high flow rates or loading and transfer operations. If this charge reaches a sufficiently high level, sparks can form that may ignite the vapors of flammable liquids. Sudden release of hot organic chemical vapors or mists from process equipment operating under elevated temperature and pressure or sudden ingress of air into vacuum equipment may result in ignitions without the presence of obvious ignition sources. Nozzle spouts must be kept in contact with the containers or tank during the entire filling operation. A buildup of static electricity can occur upon re-entry into a vehicle during transfer, especially in cold or dry climate conditions. The charge is generated by the action of dissimilar fabrics (clothing or upholstery) rubbing across each other as a person enters/exits the vehicle. A flash fire can result from this discharge if sufficient flammable vapors are present. Therefore, do not get back in your vehicle while transfer is in progress.

## Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Occupational Exposure Limits:

Name	CAS No.	Weight %	OSHA — PEL (ppm)	ACGIH® TLV® (ppm)	NIOSH REL (ppm)
<b>N-decane and decanes</b>	872-05-9	4-10	Not established	Not Established	Not Established
<b>N-pentane</b>	78-78-4	2-7	1,000; 600 <sup>A</sup>	600 (pentane/isomers)	120; 610 - STEL
<b>N-heptane</b>	142-82-5	2-5	500	400 ppm 1639 mg/m <sup>3</sup>	500 ppm 2000 mg/m <sup>3</sup>
<b>N-hexane</b>	110-54-3	1-5	500	50	50
<b>N-octane and isomers</b>	111-65-9; 540-84-1	1-5	300	500	75; 385 — STEL
<b>N-nonane</b>	111-84-2	1-5	Not established	200	200
<b>N-butane and isomers</b>	75-28-5	1-5	Not established	1,000 <sup>B</sup>	800
<b>Methylcyclohexane</b>	108-87-2	1-4	500	400	400
<b>Dimethylpentanes</b>	Mixture	1-5	Not established	Not Established	Not established
<b>1,2,4-trimethylbenzene</b>	95-63-6	1-2	Not established	25	25
<b>Toluene</b>	108-88-3	2-5	200; 300 ceiling; 100 <sup>A</sup>	20 ppm	200 ppm; 300 ceiling
<b>Benzene</b>	71-43-2	1 5 — STEL	0.5 2.5 — STEL Skin — potential absorption	0.1 1 — STEL	

All exposure limits listed are 8-hour time weighted average (TWA) — except where noted otherwise.

TWA — Time Weighted Average is an average value of exposure over the course of an 8-hour work shift.

STEL — Short-Term Exposure Limit, a TWA exposure that occurs over a 15-minute time period

PEL — Permissible Exposure Limit is the maximum amount or concentration of a chemical that a worker may be exposed to under OSHA regulations.

<sup>A</sup> Federal OSHA 1989 PELs were vacated but are in use and enforced by many state OSHA plans.

<sup>B</sup> Aliphatic hydrocarbon gas (alkane C<sub>1</sub>-C<sub>4</sub>)

**Engineering measures:** The use of local exhaust ventilation is recommended to control emissions near the source. Provide mechanical ventilation of confined spaces. Use explosion-proof ventilation equipment.

## PERSONAL PROTECTIVE EQUIPMENT

**Respiratory protection:** None required while threshold limits are kept below maximum allowable concentrations; if TWA exceeds limits, NIOSH-approved respirator must be worn. Refer to 29 CFR 1910.134 for complete regulations.

**Skin and body protection:** Neoprene, butyl or nitrile rubber gloves

**Eye protection:** Chemical splash goggles. Refer to 29 CFR 1910.133.

**Hygiene measures:** Minimize body contact with this, as well as all chemicals in general. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove contaminated clothing and launder before reuse.

## Section 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Black, dark green, or yellow liquid
<b>Physical state (solid/liquid/gas):</b>	Viscous liquid/semi-solid
<b>Substance type (pure/mixture):</b>	Mixture
<b>Color:</b>	Black, dark green, or yellow
<b>Odor:</b>	Strong hydrocarbon or sulfur odor
<b>Molecular weight:</b>	No data available
<b>pH:</b>	Not applicable
<b>Boiling point/range (5-95%):</b>	100°-1100°F
<b>Melting point/range:</b>	No data available
<b>Decomposition temperature:</b>	Not applicable
<b>Specific gravity:</b>	0.7-1.0
<b>Density:</b>	6.6-8.2 pounds/gallon
<b>Vapor density:</b>	1.5-3.0 (air=1)
<b>Vapor pressure:</b>	0-724 mm Hg @ 100°F
<b>Evaporation rate:</b>	No data available
<b>Flash point:</b>	<60° to >200°F
<b>Auto-ignition temperature:</b>	>500°F
<b>Flammable limits in air — (lower):</b>	No data available
<b>Flammable limits in air — (upper):</b>	No data available

## Section 10. STABILITY AND REACTIVITY

**Stability:** This material is stable at 70°F, 760 mm pressure.

**Polymerization:** Will not occur.  
**Hazardous decomposition products:** Carbon oxides (CO, CO<sub>2</sub>), sulfur oxides (SO, SO<sub>2</sub>), nitrogen oxides NO, NO<sub>2</sub>)  
**Materials to avoid:** Strong oxidizers such as nitrates, chlorates, and peroxides  
**Conditions to avoid:** Sources of heat or ignition

## Section 11. TOXICOLOGICAL INFORMATION

**Acute toxicity:** See table below.

### Chronic toxicity:

This product contains benzene at a level of >0.1%. Repeated or prolonged exposure to benzene at concentrations in excess of the TLV may cause serious injury to blood-forming organs. Significant chronic exposure to benzene vapor has been reported to produce various blood disorders ranging from anemia to certain forms of leukemia (cancer) in humans. Benzene produced tumors in rats and mice in lifetime chronic toxicity studies, but the response has not been consistent across species, strain, sex or route of exposure. Animal studies on benzene have demonstrated immune toxicity, chromosomal aberrations, testicular effects and alterations in reproductive cycles and embryo/fetotoxicity, but not teratogenicity.

**Product information** (toxicological data does not exist for this mixture):

Name	CAS No.	Inhalation:	Dermal:	Oral:
<b>Petroleum Crude Oil</b>	8002-05-9	No data available	No data available	No data available
<b>N-hexane</b>	110-54-3	Rat LC <sub>50</sub> 48,000ppm/4 hrs	No data available	Rat LD <sub>50</sub> 25,000 mg/kg
<b>N-pentane</b>	109-66-0	Rat LC <sub>50</sub> 364,000ppm/4 hrs	No data available	No data available
<b>N-heptane</b>	142-82-5	Rat LC <sub>50</sub> 103,000ppm/4 hrs	No data available	No data available
<b>Benzene</b>	71-43-2	Rat LC <sub>50</sub> 10,000ppm/7 hrs	No data available	Human LD <sub>Lo</sub> 50 mg/kg

**Carcinogenic and chronic health effect information:** *refer to Health Hazard Section 2*

## Section 12. ECOLOGICAL INFORMATION

**Ecotoxicity Effects:** Coating action of oil can kill birds, plankton, algae and fish. Keep out of all bodies of water and sewage drainage systems.  
 Two crude oils were tested in a battery of Ecotoxicity tests. The 96 hour lethal loading (LL<sub>50</sub>) values for rainbow trout were 21 and 41 milligrams/liter (mg/l). LL<sub>50</sub> values for invertebrate organisms were determined to be 2.7 and 4.1 mg/l.

## Section 13. DISPOSAL CONSIDERATIONS

**Cleanup considerations:** This product as produced is not specifically listed as an EPA RCRA hazardous waste according to federal regulations (40 CFR 261). However, when discarded or disposed of, it may meet the criteria of a "characteristic" hazardous waste. This product could also contain benzene at > 0.5 ppm and could exhibit characteristics of "toxicity" as determined by the toxicity characteristic leaching procedure (TCLP). This material could become hazardous waste or other substance(s). It is the

responsibility of the user to determine if disposal material is hazardous according to federal, state and local regulations.

#### Section 14. TRANSPORT INFORMATION

Please refer to 40 CFR 172.101:

DOT:

Transport information: This product when transported via U.S. commerce would be regulated by DOT regulations.

Proper shipping name: Petroleum crude oil

UN/identification no.: UN 1267

Hazard class: 3

Packing group: II

DOT reportable quantity (lbs): Not applicable

#### Section 15. REGULATORY INFORMATION

##### U.S. TSCA (Toxic Substance Control Act)

All components of this product are listed on the U.S. Toxic Substances Control Act Chemical Inventory (TSCA Inventory) or are exempted from listing because a Low Volume Exemption has been granted in accordance with 40 CFR 723.50.

**SARA Section 302:** This product does not contain components listed on EPA's Extremely Hazardous Substance (EHS) List.

##### SARA Section 304:

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) has notification requirements for releases or spills to the environment of the Reportable Quantity (RQ or greater amounts, according to 40 CFR 302.

Name	CERCLA/SARA — Hazardous substances and their reportable quantities (RQ)
Benzene	10 pounds final RQ
N-hexane	5,000 pounds final RQ
Toluene	1,000 pounds final RQ

##### SARA TITLE III Sections 311/312 Hazardous Categories (40 CFR 370.21)

ACUTE: HEALTH HAZARD

CHRONIC: HEALTH HAZARD

FIRE: FIRE HAZARD

REACTIVITY: NO

SUDDEN RELEASE: NO

##### 313 REPORTABLE INGREDIENTS

This product is a toxic chemical subject to annual reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372: Benzene, N-hexane, Toluene, 1,2,4-trimethylbenzene.

**NOTE:** User must consult with applicable state and local agencies for special specifics, determinations or compliance obligations regarding this product.

## **Section 16. OTHER INFORMATION**

The information and recommendations contained herein are based upon tests, data, and information resources believed to be reliable. However, EnLink Midstream, L.P., and its related operations or divisions (EnLink) do not guarantee the accuracy or completeness, nor shall any of this information constitute a warranty, whether expressed or implied, as to the safety of 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. EnLink assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of this data. No warranty against infringement of any patent, copyright or trademark is made or implied.