



SAFETY DATA SHEET

SDS ID NO.: 0110MAR019

Revision date 12/28/2021

1. IDENTIFICATION

Product Name Marathon Petroleum Crude Oil

Synonym Sweet Crude; Sour Crude; Light Crude; Heavy Crude
Product code 0110MAR019
Chemical family Complex Hydrocarbon Substance

Recommended use Feedstock.
Restrictions on use All others.

Manufacturer, Importer, or Responsible Party Name and Address
MARATHON PETROLEUM COMPANY LP
539 South Main Street
Findlay, OH 45840

SDS Information 1-419-421-3070 (M-F; 8-5 EST)

24 Hour Emergency Telephone CHEMTREC: 1-800-424-9300 (CCN# 13740)

2. HAZARD IDENTIFICATION

OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Classification

Flammable liquids	Category 1
Serious eye damage/eye irritation	Category 2A
Carcinogenicity	Category 1B
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2
Aspiration toxicity	Category 1
Chronic aquatic toxicity	Category 2

Hazards Not Otherwise Classified (HNOC)

Static accumulating flammable liquid
May release hydrogen sulfide gas

Label Elements

Danger

EXTREMELY FLAMMABLE LIQUID AND VAPOR
May accumulate electrostatic charge and ignite or explode
May release highly toxic hydrogen sulfide gas that quickly fatigues the sense of smell
May be fatal if swallowed and enters airways
Causes serious eye irritation
May cause respiratory irritation
May cause drowsiness or dizziness
May cause cancer
May cause damage to organs (blood, liver, spleen, thymus) through prolonged or repeated exposure.
Toxic to aquatic life with long lasting effects



Appearance Amber to Black Viscous
Liquid

Physical State Liquid

Odor Mild hydrocarbon to Rotten egg

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/hot surfaces. - No smoking
Keep container tightly closed
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 dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Wash hands and any possibly exposed skin thoroughly after handling
Avoid release to the environment

Precautionary Statements - Response

If exposed, concerned or you feel unwell: Get medical attention
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical attention
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 at rest in a position comfortable for breathing
Call a poison center or doctor if you feel unwell
If swallowed: Immediately call a poison center or doctor
Do NOT induce vomiting
In case of fire: Use CO₂, dry chemical, or foam for extinction.
Collect spillage

Precautionary Statements - Storage

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

Precautionary Statements - Disposal

Dispose of contents/container at an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Composition Information

Name	CAS Number	% Concentration
Petroleum Crude Oil	8002-05-9	100
Pentane (mixed isomers)	109-66-0	0-18
Butane (mixed isomers)	106-97-8	0-7
Heptane (mixed isomers)	142-82-5	0-6
Hexane Isomers (other than n-Hexane)	107-83-5	0-4
n-Hexane	110-54-3	0-3
Sulfur Compounds	Mixture	0-3

Octane (mixed isomers)	111-65-9	0-2
Xylene (mixed isomers)	1330-20-7	0-2
Toluene	108-88-3	0-1.5
Cyclohexane	110-82-7	0-1.5
Propane	74-98-6	0-1.5
Ethylbenzene	100-41-4	0-1.5
Benzene	71-43-2	0-0.5
Hydrogen sulfide	7783-06-4	<0.05

Can contain minor amounts of nitrogen and oxygen compounds as well as trace amounts of heavy metals such as nickel, vanadium and lead. Composition varies depending on source of crude. All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

4. FIRST AID MEASURES

First aid measures

General advice

In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation

Remove to fresh air. If not breathing, utilize bag valve mask or other form of barrier device to institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Keep affected person warm and at rest. If symptoms occur get medical attention.

Skin contact

Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. Get medical attention if irritation persists. May be absorbed through the skin in harmful amounts.

Place contaminated clothing in closed container until cleaned or discarded. If clothing is to be laundered, inform the person performing the operation of contaminant's hazardous properties. Destroy contaminated, non-chemical resistant footwear.

Eye contact

Flush immediately with large amounts of water for at least 15 minutes. Gently remove contacts while flushing. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention if irritation persists.

Ingestion

Do not induce vomiting because of danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. Get immediate medical attention.

Most important signs and symptoms, both short-term and delayed with overexposure

Adverse effects

Irritating to the eyes and mucous membranes. Symptoms may include redness, itching, and inflammation. Hydrogen sulfide can cause respiratory paralysis and death, depending on the concentration and duration of exposure. Do not rely on ability to smell vapors, since loss of smell rapidly occurs. Effects of overexposure include irritation of the nose and throat, nausea, vomiting, diarrhea, abdominal pain and signs of nervous system depression (e.g. headache, drowsiness, dizziness, loss of coordination and fatigue), irregular heartbeats, pulmonary edema, weakness and convulsions. Aspiration hazard. May cause coughing, chest pains, shortness of breath, pulmonary edema and/or chemical pneumonitis. Prolonged or repeated exposure may cause adverse effects to the blood, liver, spleen, thymus. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.

Indication of any immediate medical attention and special treatment needed

Notes to physician

INHALATION: Inhalation exposure can produce toxic effects. Treat intoxications as hydrogen sulfide exposures. At high concentrations hydrogen sulfide may produce pulmonary edema, respiratory depression, and/or respiratory paralysis. The first priority in treatment should be the establishment of adequate ventilation and the administration of

100% oxygen. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for upper respiratory tract inflammation, bronchitis, and pneumonitis. This material (or a component) sensitizes the myocardium to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material. Administration of sympathomimetic drugs should be avoided.

INGESTION: This material represents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	For small fires, Class B fire extinguishing media such as CO ₂ , dry chemical, foam or water spray can be used. For large fires, water spray, fog or foam can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.
Unsuitable extinguishing media	Do not use straight water streams to avoid spreading fire.
Specific hazards arising from the chemical	This product has been determined to be an extremely flammable liquid per the OSHA Hazard Communication Standard and should be handled accordingly. May accumulate electrostatic charge and ignite or explode. 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 Emergency Response Guidebook 128.
Hazardous combustion products	Smoke, carbon monoxide, and other products of incomplete combustion.
Explosion data	
Sensitivity to mechanical impact:	No.
Sensitivity to static discharge:	Yes.
Special protective equipment and precautions for firefighters	Firefighters should wear full protective clothing and positive-pressure self-contained breathing apparatus (SCBA) with a full face-piece, as appropriate. Avoid using straight water streams. Water spray and foam must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Water may be ineffective in extinguishing low flash point fires, but can be used to cool exposed surfaces. Keep run-off water out of sewers and water sources.
Additional firefighting tactics	<p>FIRES 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 the fire is out. Do not direct water at source of leak or safety devices; icing may occur. 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. Above ground crude oil storage tank fires present a boil-over hazard. The potential for a boil-over of flammable product exists. Crude oil self-conducts heat and can expand water trapped on the bottom of the tank during a full surface fire. The potential of an explosive boil-over of flammable liquid product exists when the tank is exposed to fire for a long duration of time.</p> <p>EVACUATION: Consider initial downwind evacuation for at least 1000 feet. If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation of 1600 meters (1 mile) in all directions.</p>

NFPA

Health 2

Flammability 3

Instability 0

Special Hazard -

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources. All contaminated surfaces will be slippery.
Protective equipment	Use personal protection measures as recommended in Section 8.
Emergency procedures	Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.
Environmental precautions	Avoid release to the environment. Avoid subsoil penetration.
Methods and materials for containment	Contain liquid with sand or soil. Prevent spilled material from entering storm drains, sewers, and open waterways.
Methods and materials for cleaning up	Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers. When recovering free liquids ensure all equipment is grounded and bonded. Use only non-sparking tools.

7. HANDLING AND STORAGE

Safe handling precautions	<p>Use appropriate grounding and bonding practices. Static accumulating flammable liquid. Bonding and grounding may be insufficient to eliminate the hazard from static electricity. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. Vapors may travel along the ground or be moved by ventilation. Flashback may occur along vapor trails. No smoking. Use only non-sparking tools. Avoid breathing fumes, gas, or vapors. Use only with adequate ventilation. Avoid contact with skin, eyes and clothing. Use personal protection measures as recommended in Section 8. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.</p> <p>Harmful concentrations of hydrogen sulfide (H₂S) gas can accumulate in excavations and low-lying areas as well as the vapor space of storage and bulk transport compartments. Stay upwind and vent open hatches before unloading. Sulfur containing products may cause polysulfide deposits (iron sulfide) to form inside iron storage tanks. These pyrophoric deposits, upon exposure to air, can ignite spontaneously.</p> <p>Hydrocarbons are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering, 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 ignition of vapors or mists without the presence of obvious ignition sources. Nozzle spouts must be kept in contact with the containers or tank during the entire filling operation.</p>
Storage conditions	Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Do not store near an open flame, heat or other sources of ignition.
Incompatible materials	Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Name	ACGIH TLV	OSHA PELS	NIOSH IDLH
Petroleum Crude Oil 8002-05-9	-	TWA: 500 ppm TWA: 2000 mg/m ³	1100 ppm
Pentane (mixed isomers) 109-66-0	1000 ppm TWA	TWA: 1000 ppm TWA: 2950 mg/m ³	1500 ppm

Butane (mixed isomers) 106-97-8	1000 ppm STEL	-	1600 ppm
Heptane (mixed isomers) 142-82-5	400 ppm TWA 500 ppm STEL	TWA: 500 ppm TWA: 2000 mg/m ³	750 ppm
Hexane Isomers (other than n-Hexane) 107-83-5	500 ppm TWA 1000 ppm STEL	-	-
n-Hexane 110-54-3	50 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 500 ppm TWA: 1800 mg/m ³	1100 ppm
Octane (mixed isomers) 111-65-9	300 ppm TWA	TWA: 500 ppm TWA: 2350 mg/m ³	1000 ppm
Xylene (mixed isomers) 1330-20-7	100 ppm TWA 150 ppm STEL	TWA: 100 ppm TWA: 435 mg/m ³	900 ppm
Toluene 108-88-3	20 ppm TWA OTO - potential to cause hearing impairment alone or in combination with noise	TWA: 200 ppm Ceiling: 300 ppm	500 ppm
Cyclohexane 110-82-7	100 ppm TWA	TWA: 300 ppm TWA: 1050 mg/m ³	1300 ppm
Propane 74-98-6	Simple asphyxiant	TWA: 1000 ppm TWA: 1800 mg/m ³	2100 ppm
Ethylbenzene 100-41-4	20 ppm TWA	TWA: 100 ppm TWA: 435 mg/m ³	800 ppm
Benzene 71-43-2	0.5 ppm TWA 2.5 ppm STEL Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 1 ppm STEL: 5 ppm TWA: 10 ppm (applies to industry segments exempt from the benzene standard) (see 29 CFR 1910.1028)	500 ppm
Ethane 74-84-0	Simple asphyxiant	-	-
Hydrogen sulfide 7783-06-4	1 ppm TWA 5 ppm STEL	Ceiling: 20 ppm Peak: 50 ppm	100 ppm

Notes: No further information available.

Engineering measures Local or general exhaust required in an enclosed area or when there is inadequate ventilation. Use mechanical ventilation equipment that is explosion-proof.

Personal protective equipment

Eye protection Use goggles or face-shield if the potential for splashing exists.

Skin and body protection Viton® or polyethylene/ethylene vinyl alcohol (PE/EVAL) gloves for prolonged or repeated skin exposure. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times. Depending upon the conditions of use and specific work situations, additional protective equipment and/or clothing may be required to control exposures.

Respiratory protection For unknown vapor concentrations, use a positive pressure, positive demand self-contained breathing apparatus. Supplied air respirators should be used if operating conditions create airborne concentrations which exceed exposure limits for any individual components (including H₂S). Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.

Hygiene measures Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Amber to Black Viscous Liquid
Physical State	Liquid
Color	Amber to Black
Odor	Mild hydrocarbon to Rotten egg
Odor Threshold	No data available.
Property	Values (method)
pH	Not applicable
Melting Point / Freezing Point	No data available.
Initial Boiling Point / Boiling Range	-55.5 to 852 °C / -68 to 1565 °F
Flash Point	-34 °C / -30 °F
Evaporation Rate	No data available.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%):	
Upper Flammability Limit:	No data available.
Lower Flammability Limit:	No data available.
Explosion Limits	No data available.
Vapor Pressure	1-12 psia @ 100°F
Vapor Density	No data available.
Specific Gravity / Relative Density	0.73-0.98
Water Solubility	No data available.
Partition Coefficient	No data available.
Autoignition Temperature	No data available.
Decomposition Temperature	No data available.
Kinematic Viscosity	2-696 cSt
VOC Content (%)	No data available.

10. STABILITY AND REACTIVITY

Reactivity	The product is non-reactive under normal conditions.
Chemical stability	The material is stable at 70°F (21°C), 760 mmHg pressure.
Possibility of hazardous reactions	None under normal processing.
Hazardous polymerization	Will not occur.
Conditions to avoid	Excessive heat, sources of ignition, open flame.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	None known under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures

Inhalation	May cause irritation of respiratory tract. May cause drowsiness or dizziness. Breathing high concentrations of this material, for example, in a confined space or by intentional abuse, can cause irregular heartbeats which can cause death. May release highly toxic hydrogen sulfide gas that quickly fatigues the sense of smell. Concentrations of >1000 ppm will cause immediate unconsciousness and death through respiratory paralysis.
Eye contact	Irritating to eyes. Vapors may cause eye irritation and sensitivity to light.
Skin contact	May cause skin irritation and/or dermatitis. May be absorbed through the skin in harmful amounts. Effects may become more serious with repeated or prolonged contact.
Ingestion	May be fatal if swallowed or vomited and enters airways. May cause irritation of the mouth, throat and gastrointestinal tract.

Acute toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
Petroleum Crude Oil 8002-05-9	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	-
Pentane (mixed isomers) 109-66-0	> 2000 mg/kg (Rat)	-	364 mg/L (Rat) 4 h
Butane (mixed isomers) 106-97-8	-	-	658 mg/L (Rat) 4 h
Heptane (mixed isomers) 142-82-5	-	3000 mg/kg (Rabbit)	103 g/m ³ (Rat) 4 h
Hexane Isomers (other than n-Hexane) 107-83-5	> 5000 mg/kg (Rat)	-	-
n-Hexane 110-54-3	15000 mg/kg (Rat)	3000 mg/kg (Rabbit)	48000 ppm (Rat) 4 h
Sulfur Compounds Mixture	-	-	>5 mg/l (Rat) 4 h
Octane (mixed isomers) 111-65-9	>2000 mg/kg (Rat)	-	118 g/m ³ (Rat) 4 h
Xylene (mixed isomers) 1330-20-7	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.04 mg/L (Rat) 4 h
Toluene 108-88-3	> 2000 mg/kg (Rat)	8390 mg/kg (Rabbit)	12.5 mg/L (Rat) 4 h
Cyclohexane 110-82-7	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	13.9 mg/L (Rat) 4 h
Propane 74-98-6	-	-	> 1,464 mg/L (Rat) 15 min
Ethylbenzene 100-41-4	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	17.2 mg/L (Rat) 4 h
Benzene 71-43-2	> 2000 mg/kg (Rat)	> 5000 mg/kg (Rabbit)	> 20 mg/l (Rat) 4 h
Ethane 74-84-0	-	-	658 mg/L (Rat) 4 h
Hydrogen sulfide 7783-06-4	-	-	444 ppm (Rat) 4 h

Immediate and delayed effects as well as chronic effects from short and long-term exposure

CRUDE OIL: Lifetime skin painting studies in animals with whole crude oils and crude oil fractions have produced tumors in animals following prolonged and repeated skin contact. Repeated dermal application of two different crude oils in rats produced systemic toxicity in blood, liver, thymus and bone marrow. Repeated dermal application to pregnant rats produced maternal toxicity and fetal developmental toxicity.

PROPANE, BUTANE and PENTANE: Laboratory animal studies indicate exposure to extremely high levels (1 to 10 vol.% in air) may cause cardiac arrhythmias (irregular heartbeats) which may be serious or fatal.

N-HEXANE: Short-term overexposure to n-hexane vapor may cause headache, nausea, vomiting, dizziness, lightheadedness, loss of consciousness, coma, and even death in humans. Respiratory effects of overexposure may include nose, throat, and lung irritation, coughing, wheezing, and shortness of breath. Direct and prolonged contact with liquid may cause dryness and redness of the skin. Long-term or repeated overexposure to n-hexane can cause peripheral nerve damage. Initial signs are numbness of the fingers and toes. Motor/muscle weakness can occur in the digits, but may also involve muscles of the arms, forearms, and thighs. Onset of these signs may be delayed for several months to a year after initial exposure. Repeated and sustained inhalation exposure to high vapor concentrations of n-hexane resulted in degenerative changes in the testes and reduced sperm count in male laboratory rats.

SULFUR: Prolonged or repeated exposure to sulfur dust can cause allergic sensitization and reduced pulmonary function. Permanent eye damage (corneal opacities and cataract-like lesions) have been associated with long-term and high-level exposure to sulfur.

XYLENE: Overexposure to airborne xylene may cause upper respiratory tract irritation, headache, cyanosis, blood serum changes, nervous system damage and narcosis. Impaired neurological function has been reported in workers exposed to solvents including xylene. Laboratory animal studies have shown evidence of impaired hearing after prolonged exposure high airborne concentrations. Laboratory animal studies suggest some changes in reproductive organs after exposure to high airborne

concentrations of xylene without an effect on reproduction. Skeletal and visceral malformations, developmental delays, and increased fetal resorptions were observed in laboratory animals after extremely high airborne concentrations with evidence of maternal toxicity. Adverse effects on the liver, kidney, and bone marrow were observed in laboratory animals after prolonged and repeated exposure to high airborne concentrations of xylene.

TOLUENE: Inhalation abuse of toluene at high concentrations has been associated with adverse effects on the liver, kidney and nervous system, and can cause nervous system depression, cardiac arrhythmias, and death. Studies of workers indicate long-term exposure may be related to impaired color vision and hearing. Some studies of workers suggest long-term exposure may be associated with neurobehavioral and mental functional changes. Laboratory animal studies indicate some changes in reproductive organs after exposure to high airborne concentrations, but no significant effects on mating performance or reproduction were observed. Positive findings include small increases in minor skeletal and visceral malformations and developmental delays following maternal exposure to high concentrations. Adverse effects on the liver, kidney, thymus and nervous system of laboratory animal were observed after very high levels of prolonged and repeated exposure.

CYCLOHEXANE: Cyclohexane may be fatal if swallowed and enters the airways. Short-term exposure to excessive concentrations can irritate the nose and throat, and cause coughing, wheezing, headache, dizziness, nausea, vomiting, lightheadedness, drowsiness, and unconsciousness. Repeated and prolonged contact with liquid may cause drying and cracking of the skin.

ETHYLBENZENE: Lifetime exposure studies of rodents to ethylbenzene reported elevated kidney tumors in male and female rats exposed to the highest concentration tested. Tumors of the lungs were elevated in male mice and in the livers of females exposed at the highest concentration tested. Effects on the liver, kidney, lung, thyroid, and pituitary of these animals as well. Laboratory animal studies (rats) demonstrated hearing loss in combination with exposure to noise.

BENZENE: Benzene exposure may cause skin, eye and respiratory irritation. Excessive exposures may cause central nervous system effects. Numerous studies of workers exposed to airborne benzene for prolonged or repeated periods show strong evidence that overexposure can cause cancer of the blood, AML (acute myeloid leukemia), along with other disorders indicating damage to the blood forming organs including aplastic anemia, leukopenia, thrombocytopenia, and the development of myelodysplastic syndrome. Some studies of pregnant women occupationally exposed to benzene suggest associations with an increased risk of miscarriage, stillbirth, reduced birth weight, and gestational age. Prolonged and repeated exposure to benzene has induced chromosomal aberrations in circulating human lymphocytes, in bone marrow cells of laboratory animals, and in sperm cells of both humans and laboratory animals.

HYDROGEN SULFIDE: Hydrogen sulfide has a strong, unpleasant odor resembling that of rotten eggs. Odor, however, is not a reliable means for detecting potentially dangerous concentration of the gas, as the sense of smell diminishes very rapidly at concentrations of 50 ppm or higher. Eye irritation has been reported at 4 ppm. Irritation of the respiratory tract may occur at 50 ppm. Hydrogen sulfide gas may be fatal if inhaled in sufficient concentrations. Immediate loss of consciousness and death resulting from respiratory paralysis has occurred at concentrations as low as 500 ppm.

POLYCYCLIC AROMATIC HYDROCARBONS (PAHs): Cancer is the most significant endpoint for PAHs. Certain PAHs are weak carcinogens which become carcinogenic after undergoing metabolism. Chronic or repeated exposure increases the likelihood of tumor initiation. Increased incidence of tumors of the skin, bladder, lung and gastrointestinal tract have been described in individuals overexposed to certain PAHs. Overexposure to PAHs has also been associated with photosensitivity and eye irritation. Inhalation overexposure of PAHs has been associated with respiratory tract irritation, cough, and bronchitis. Dermal overexposure has been associated with precancerous lesions, erythema, dermal burns, photosensitivity, acneiform lesions and irritation. Oral overexposure to PAHs has been associated with precancerous growths of the mouth (leukoplakia). Mild nephrotoxicity, congestion and renal cortical hemorrhages and elevated liver function tests, changes in the immune system and other effects have been observed in rats exposed to high levels of PAHs by ingestion. The International Agency for Research on Cancer (IARC) has concluded that some PAHs are probably carcinogenic to humans.

Adverse effects related to the physical, chemical and toxicological characteristics

Signs and symptoms

Irritating to the eyes and mucous membranes. Symptoms may include redness, itching, and inflammation. Hydrogen sulfide can cause respiratory paralysis and death, depending on the concentration and duration of exposure. Do not rely on ability to smell vapors, since loss of smell rapidly occurs. Effects of overexposure include irritation of the nose and throat, nausea, vomiting, diarrhea, abdominal pain and signs of nervous system depression (e.g. headache, drowsiness, dizziness, loss of coordination and fatigue), irregular heartbeats, pulmonary edema, weakness and convulsions. Aspiration hazard. May cause coughing, chest pains, shortness of breath, pulmonary edema and/or chemical pneumonitis. Prolonged or repeated exposure may cause damage to organs. Repeated exposure may cause skin dryness or cracking.

Acute toxicity	None known.
Skin corrosion/irritation	None known.
Serious eye damage/eye irritation	Causes serious eye irritation.
Sensitization	None known.
Mutagenic effects	None known.
Carcinogenicity	May cause cancer.

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Petroleum Crude Oil 8002-05-9	Not Listed	Not Classifiable (3)	Known	Not Listed
Xylene (mixed isomers) 1330-20-7	Not classifiable (A4)	Not classifiable (3)	Not Listed	Not Listed
Toluene 108-88-3	Not classifiable (A4)	Not classifiable (3)	Not Listed	Not Listed
Ethylbenzene 100-41-4	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Not Listed	Not Listed
Benzene 71-43-2	Confirmed human carcinogen (A1)	Carcinogenic to humans (1)	Known to be human carcinogen	Known carcinogen

Reproductive toxicity	None known.
Specific Target Organ Toxicity (STOT) - single exposure	May cause respiratory irritation. May cause drowsiness or dizziness.
Specific Target Organ Toxicity (STOT) - repeated exposure	May cause damage to organs (Blood, Liver, Spleen, Thymus) through prolonged or repeated exposure.
Aspiration hazard	May be fatal if swallowed or vomited and enters airways.

12. ECOLOGICAL INFORMATION

Ecotoxicity This product should be considered toxic to aquatic organisms, with the potential to cause long lasting adverse effects in the aquatic environment.

Name	Fish	Crustacea	Algae/aquatic plants
Petroleum Crude Oil 8002-05-9	96-hr LL50 = 10-100 mg/l Fish	48-hr EL50 = 1-10 mg/l Crustacea	72-hr EL50 = 10-100 mg/l Algae
Pentane (mixed isomers) 109-66-0	96-hr LC50 >1 - <10 mg/L Rainbow trout	48-hr EC50 = 9.7 mg/L Daphnia magna	-
Heptane (mixed isomers) 142-82-5	96-hr LC50 = 375 mg/L Tilapia	-	-
n-Hexane 110-54-3	96-hr LC50 = 2.5 mg/l Fathead minnow	-	-
Octane (mixed isomers) 111-65-9	-	48-hr LC50 = 0.38 mg/l Daphnia magna	-
Xylene (mixed isomers) 1330-20-7	96-hr LC50 = 8 mg/l Rainbow trout	48-hr LC50 = 3.82 mg/l Daphnia magna	72-hr EC50 = 11 mg/l Algae
Toluene 108-88-3	96-hr LC50 ≤ 10 mg/l Rainbow trout	48-hr EC50 = 5.46-9.83 mg/l Daphnia magna 48-hr EC50 = 11.5 mg/l Daphnia magna (Static)	72-hr EC50 = 12.5 mg/l Algae
Cyclohexane 110-82-7	96-hr LC50 = 3.96-5.18 mg/l Fathead minnow	48-hr EC50 = 1.7-3.5 mg/L Bay shrimp	72-hr EC50 = 500 mg/l Algae
Ethylbenzene 100-41-4	96-hr LC50 = 4 mg/L Rainbow trout	48-hr EC50 = 1-4 mg/L Daphnia magna	72-hr EC50 = 1.7-7.6 mg/l Algae
Benzene	96-hr LC50 = 5.3 mg/l	48-hr EC50 = 8.76-15.6 mg/l	72-hr EC50 = 29 mg/l

71-43-2	Rainbow trout (flow-through)	Daphnia magna (Static)	Algae
Hydrogen sulfide 7783-06-4	96-hr LC50 = 0.016 mg/l Fathead minnow 96-hr LC50 = 0.013 mg/l Rainbow trout	-	-

Persistence and degradability Expected to be inherently biodegradable.

Bioaccumulation Has the potential to bioaccumulate.

Mobility in soil May partition into air, soil and water.

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Description of waste residues This material may be a flammable liquid waste.

Safe handling of wastes Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required. Use appropriate grounding and bonding practices. Use only non-sparking tools. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking.

Disposal of wastes / methods of disposal The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

Contaminated packaging disposal Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT

UN/Identification No: UN 1267
UN Proper Shipping Name: Petroleum Crude Oil
Transport Hazard Class(es): 3
Packing Group: I

IATA

UN/Identification No: UN 1267
UN Proper Shipping Name: Petroleum Crude Oil
Transport Hazard Class(es): 3
Packing Group: I

IMDG

UN/Identification No: UN 1267
UN Proper Shipping Name: Petroleum Crude Oil
Transport Hazard Class(es): 3
Packing Group: I
EmS No: F-E, S-E
Marine Pollutant: Yes

15. REGULATORY INFORMATION

Regulatory Information

US TSCA Chemical Inventory This product and/or its components are listed on the TSCA Chemical Inventory or are

exempt.

Canada DSL/NDL Inventory This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

EPA Superfund Amendment & Reauthorization Act (SARA)

SARA Section 302 This product may contain component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Hydrogen sulfide	500

SARA Section 304 This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	Hazardous Substances RQs
n-Hexane 110-54-3	5000 lb 2270 kg
Xylene (mixed isomers) 1330-20-7	100 lb 45.4 kg
Toluene 108-88-3	1000 lb 454 kg
Cyclohexane 110-82-7	1000 lb 454 kg
Ethylbenzene 100-41-4	1000 lb 454 kg
Benzene 71-43-2	10 lb 4.54 kg
Hydrogen sulfide 7783-06-4	100 lb 45.4 kg

SARA Section 311/312 The following EPA hazard categories apply to this product:

- Flammable
- Hazard Not Otherwise Classified (HNOC)-Physical
- Serious eye damage or eye irritation
- Carcinogenicity
- Specific target organ toxicity
- Aspiration hazard
- Hazard Not Otherwise Classified (HNOC)-Health

SARA Section 313 This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting
Petroleum Crude Oil 8002-05-9	0.1 % Supplier notification limit
n-Hexane 110-54-3	1.0 % de minimis concentration
Xylene (mixed isomers) 1330-20-7	1.0 % de minimis concentration
Toluene 108-88-3	1.0 % de minimis concentration
Cyclohexane 110-82-7	1.0 % de minimis concentration
Ethylbenzene 100-41-4	0.1 % de minimis concentration
Benzene	0.1 % de minimis concentration

71-43-2	
Hydrogen sulfide 7783-06-4	1.0 % de minimis concentration

U.S. State Regulations**California Proposition 65**

This product can expose you to chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm.

Name	California Proposition 65
n-Hexane 110-54-3	Male reproductive toxicity, initial date 12/15/17
Toluene 108-88-3	Developmental toxicity, initial date 01/01/91
Ethylbenzene 100-41-4	Carcinogen, initial date 06/11/04
Benzene 71-43-2	Carcinogen, initial date 02/27/87 Male developmental toxicity, initial date 12/26/97

For more information, go to www.P65Warnings.ca.gov.

State Right-To-Know Regulations The following component(s) of this material are identified on the regulatory lists below:

Name	New Jersey Right-To-Know	Pennsylvania Right-To-Know	Massachusetts Right-To-Know
Petroleum Crude Oil 8002-05-9	Listed	Listed	Listed
Pentane (mixed isomers) 109-66-0	Listed	Listed	Listed
Butane (mixed isomers) 106-97-8	Listed	Listed	Listed
Heptane (mixed isomers) 142-82-5	Listed	Listed	Listed
Hexane Isomers (other than n-Hexane) 107-83-5	Listed	Listed	Listed
n-Hexane 110-54-3	Listed	Listed	Listed
Sulfur Compounds Mixture	Listed	Listed	Listed
Octane (mixed isomers) 111-65-9	Listed	Listed	Listed
Xylene (mixed isomers) 1330-20-7	Listed	Listed	Listed
Toluene 108-88-3	Listed	Listed	Listed
Cyclohexane 110-82-7	Listed	Listed	Listed
Propane 74-98-6	Listed	Listed	Listed
Ethylbenzene 100-41-4	Listed	Listed	Listed
Benzene 71-43-2	Listed	Listed	Listed
Ethane 74-84-0	Listed	Listed	Listed
Hydrogen sulfide 7783-06-4	Listed	Listed	Listed

16. OTHER INFORMATION

Prepared by

Toxicology & Product Safety

NFPARevision Notes

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Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.