

CRUDE OIL

SECTION 1 – PRODUCT IDENTIFICATION

PRODUCT NAME:	CRUDE OIL		
SYNONYMS:	NONE		
PRODUCT MANUFACTURER / DISTRIBUTOR:	Discovery Natural Resources	Phone Number: (303) 893-5073	
	1001 17th St., STE. 2000		
	Denver, CO 80202		
RECOMMENDED USE: REFINING FEEDSTOCK	CAS #: MIXTURE		
EMERGENCY PHONE NUMBERS:	(325) 835-3465	DISCOVERY 24/7 OPERATIONS CENTER	REVISION DATE: 9/1/24

SECTION 2 – HAZARD IDENTIFICATION

Classification

Flammable liquid	Category 2
Carcinogen	Category 1
Target organ toxicant (central nervous system)	Category 3
Target organ toxicant (repeated exposure)	Category 3
Aspiration toxicant	Category 1
Chronic aquatic toxicant	Category 2

Label Symbol



GHS02

GHS07

GHS08

Emergency Overview: DANGER! Highly flammable. Will be easily ignited by heat, spark or flames.

Signal Word: DANGER!

Hazard Statements	
Physical	H225: Highly flammable liquid and vapor
Health	H350: May cause cancer
	H336: May cause drowsiness or dizziness
	H402: Harmful to aquatic life
Precautionary Statements	
Prevention	P201: Obtain special instructions before use
	P233: Keep container tightly closed
	P242: Use only non-sparking tools
	P273: Avoid release to the environment
Response	P331: Do NOT induce vomiting
Storage	Keep stored in a container with limited access.

Potential Health Effects	
Inhalation:	Irritating to respiratory system. May cause cancer by inhalation. Prolonged inhalation may be harmful. Do not breathe dust/fume/gas/mist/vapors/spray. Vapors may cause drowsiness and dizziness.
Eye Contact:	Causes eye irritation. Eye contact may result in corneal injury. Do not get this material in contact with eyes.
Skin Contact:	Causes skin irritation. Do not get this material in contact with skin.
Ingestion:	Do not ingest. Harmful or fatal if swallowed. Can enter lungs and cause damage. Components of the product may be absorbed into the body by ingestion.
OSHA Regulatory Status:	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication). Contains benzene – Cancer Hazard

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

CAS NO	CHEMICAL NAME	CONCENTRATION*
8002-05-9	Crude Oil (Petroleum Distillate)	100%
Crude oil contains varying percentages of the following:		
110-82-7	Cyclohexane	Varies
110-54-3	Hexane	Varies
71-43-2	Benzene	Varies
108-88-3	Toluene	Varies
100-41-4	Ethylbenzene	Varies
1330-20-7	Xylene	Varies

*ALL CONCENTRATIONS ARE IN PERCENT BY WEIGHT

SECTION 4 – FIRST AID MEASURES

Inhalation:	Move injured person into fresh air and keep the person calm and under observation. If breathing is difficult, give oxygen. Get medical attention immediately.
Skin Contact:	Remove contaminated clothes and rinse skin thoroughly with water for at least 15 minutes. Get medical attention if irritation develops or persists.
Eye Contact:	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Hold eyelids open to ensure thorough flushing. Get medical attention immediately.
Ingestion:	Give one or two glasses of water if the patient is alert and able to swallow. Seek immediate medical attention. Do not induce vomiting.
Notes to Physician:	Oxygen, if needed. Keep victim warm. Keep victim under observation. The onset of symptoms may be delayed.
General Advice:	In case of shortness of breath, give oxygen. Ensure that medical personnel is aware of the material(s) involved, and take precautions to protect themselves. Keep victim under observation.

SECTION 5 – FIREFIGHTING MEASURES

Flammable Properties:	This product is an OSHA and NFPA Class 1B flammable liquid. Extremely flammable liquid and vapor. Material releases flammable vapors at or below ambient temperatures and readily forms flammable mixtures with air. Containers may explode when heated. The vapors may travel long distances to a point of ignition and flashback. Runoff to sewer may cause fire or explosion hazard.
Flammable Limits, % Volume in Air:	0.6 (estimated lower) to 15 (estimated upper)
Suitable Extinguishing Media:	Extinguish with foam, dry powder, water fog or carbon dioxide.
Unsuitable Extinguishing Media:	Does not use a solid water stream as it may scatter and spread the fire.
Hazardous Combustion Products:	Fire may produce irritating, corrosive and/or toxic gases such as carbon monoxide, aldehydes, aromatics, and other hydrocarbons.

Protective Equipment and Precautions for Firefighters:	<p>In case of fire and/or explosion do not breathe fumes. Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Move containers from fire area if you can do it without risk. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let the fire burn.</p>
Specific Methods:	<p>In the event of a fire and/or explosion do not breathe fumes. In the event of a fire, cool tanks with water spray. Use water spray to cool unopened containers.</p>

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions:	<p>Keep unnecessary personnel away and eliminate ignition sources (no smoking, flares, spark generating equipment). Stay upwind. Keep out of low areas. Keep people away from and upwind of spill/leak. Ventilate closed spaces before entering. Ensure adequate ventilation. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.</p>
Environmental Precautions:	<p>Prevent further leakage or spillage if safe to do so. If possible to safely do so take measures to prevent material from entering waterways, sewers, basements, and confined areas. Where possible, dike the spilled material to prevent further migration.</p>
Methods for Containment:	<p>Wipe up with absorbent material (e.g. cloth, fleece). Properly store saturated absorbent materials to prevent further release into the environment.</p> <p>Large Spills: Evacuate area and remove ignition sources. Build dike far ahead of the spill to contain materials for later disposal. Remove free liquid; do not flush to sewer or open water.</p> <p>Small Spills: Pick up with an inert absorbent such as sand or vermiculite, and place in closed container for disposal.</p>
Other Information:	<p>Never return spills to original containers for re-use. Clean up in accordance with all applicable regulations.</p>

SECTION 7 – HANDLING AND STORAGE

Handling:	Wear personal protective equipment. Do not empty into drains. Keep away from sources of ignition - No smoking. May be ignited by open flame. Vapors may form explosive mixtures with air. Avoid contact with skin. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid release to the environment. Do not get this material in contact with eyes. Use only with adequate ventilation. Avoid prolonged exposure. All equipment used when handling the product must be grounded. Wash thoroughly after handling.
Storage:	The pressure in sealed containers can increase under the influence of heat. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate a static charge which may cause a spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in cool, well-ventilated location. Keep container tightly closed. Keep this material away from food, drink and animal feed. Keep out of the reach of children.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	Source	Type	Exposure Limits	Notes
Cyclohexane	ACGIH	TWA	300 ppm	
Cyclohexane	OSHA	PEL	300 ppm	
Hexane	ACGIH	TWA	50 ppm	
Hexane	OSHA	PEL	500 ppm	
Benzene	ACGIH	STEL	2.5 ppm	
Benzene	OSHA	TWA	0.5 ppm	
Benzene	OSHA	STEL	5 ppm	
Benzene	OSHA	PEL	1ppm	
Toluene	ACGIH	TWA	20ppm	
Toluene	OSHA	Ceiling	500 ppm	
Toluene	OSHA	STEL	300ppm	
Toluene	OSHA	PEL	200 ppm	
Ethylbenzene	ACGIH	STEL	125 ppm	
Ethylbenzene	ACGIH	TWA	100 ppm	
Ethylbenzene	OSHA	PEL	100 ppm	
Xylene	ACGIH	TWA	100ppm	
Xylene	ACGIH	STEL	150ppm	
Xylene	OSHA	PEL	100 ppm	

Engineering Controls:	Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Provide adequate ventilation and minimize the risk of inhalation of vapors and mists.
Personal Protection	
Eye / face Protection:	Avoid contact with eyes. Goggles or face shield are recommended where there is a possibility of splashing or spraying. If contact lenses are worn, consult an eye specialist or a safety professional for additional precautions. Suitable eye wash water should be available in case of eye contact with this material.

Skin Protection:	Apron and long sleeves are recommended. Gloves constructed of nitrile, neoprene, or PVC are recommended. Chemical protective clothing such as DuPont TyChem®, Saranex® or equivalent recommended based on the degree of exposure. Note: The breakthrough performance of materials may vary between products, based on the degree of exposure. Consult manufacturer specifications for further information.
Respiratory Protection:	A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges/canisters should be used where airborne concentrations are, or may be expected to be, above exposure limits or for odor or irritation. The protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the respirator manufacturer for additional guidance on respiratory protection selection. Self-contained breathing apparatus (SCBA) should be used for firefighting. Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.
General Hygiene Considerations:	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Do not get this material in contact with eyes. Avoid contact with skin. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Color:	Amber to black
Odor:	Mild hydrocarbon
Physical State:	Viscous liquid
pH:	NA
Melting Point:	NA
Freezing Point:	Data Not Available
Boiling Point:	50 - 1000 °F (10 – 537.77 °C)
Flash Point:	< 73 °F (< 23 °C)
Evaporation Rate:	Slow, varies with conditions
Flammability (Solid):	NA – material is liquid at standard temperature and pressure
Flammability Limit – Upper (%)	15 (estimated)
Flammability Limit – Lower (%)	1 (estimated)
Vapor Pressure:	< 500 mmHg @ 60°F
Vapor Density (Air=1)	>1
Specific Gravity	0.7 – 1.0
Solubility in Water:	Negligible
Solubility (Other):	Data Not Available
Partition Coefficient (n-Octanol/water):	Data Not Available
Autoignition Temperature:	Data Not Available
Viscosity:	Varies
Explosive Properties:	Data Not Available

SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability:	Stable under normal temperature conditions.
Conditions to Avoid:	Heat, flames, and sparks.
Incompatible Materials:	Strong oxidizing agents.
Hazardous decomposition products:	Carbon monoxide, aldehydes, aromatic, and other hydrocarbons.
The possibility of hazardous reactions:	Hazardous polymerization does not occur.

SECTION 11 – TOXICOLOGICAL INFORMATION

Specified Substance(s)	Acute Toxicity:
Chemical Name	Test Results
Crude Oil	Acute Other LD50 Mouse: 29574 mg/kg estimated
Cyclohexane	Acute Oral LD50 Mouse: 813 mg/kg
Hexane (110-54-3)	Acute Dermal LD50 Rabbit: > 2 g/kg Acute Oral LD50 Rat: 24 g/kg
Benzene (71-43-2)	Acute Inhalation LC50 Mouse: 9980 mg/l Acute Inhalation LC50 Rat: 10000 mg/l 7 Hours Acute Oral LD50 Mouse: 4700 mg/kg Acute Oral LD50 Rat: 3306 mg/kg Acute Other LD50 Rat: 2890 µg/kg
Toluene	
Ethylbenzene (100-41-4)	Acute Dermal LD50 Rabbit: 17800 mg/kg Acute Oral LD50 Rat: 3500 mg/kg Acute Other LD50 Mouse: 2272 mg/kg
Xylene	Acute Oral LD50 Rat: 4,300 mg/kg Acute Inhalation LC50 Rat: 4,550 ppm for four hours Acute Dermal LD50 Rabbit: 14,100 µL/kg

Listed Carcinogens:

Chemical Name	IARC	NTP	OSHA	ACGIH
Benzene	1	Known carcinogen	Cancer Hazard	A1
Toluene	3	Not listed	Not Listed	A4
Ethylbenzene	2B	Not listed	Not Listed	A3
Xylene	2B	Not listed		

IARC: 1 = Carcinogenic to Humans; 2A = Probably Carcinogenic to Humans; 2B = Possibly Carcinogenic to Humans; 3 = Not classifiable as to carcinogenicity to humans; 4 = Probably not carcinogenic to humans; Not listed = Not evaluated by IARC.

ACGIH: A1 = Confirmed Human Carcinogen; A2 = Suspected Human Carcinogen; A3 = Confirmed Animal Carcinogen; A4 = Not classifiable as a human carcinogen; A5 = Not suspected to be a human carcinogen; Not listed = Not evaluated by ACGIH.

Epidemiology:	Hazardous by OSHA criteria.
Mutagenicity:	Not available.
Neurological Effects:	Hazardous by OSHA criteria.
Reproductive Effects:	Avoid exposure to women during early pregnancy.
Teratogenicity:	Not available
Further Information:	Symptoms may be delayed.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicological data Components	Test Results
Cyclohexane	No data available
Hexane (110-54-3)	LC50 Fathead minnow (Pimephales promelas): 2.101 - 2.981 mg/l 96 Hours
Benzene (71-43-2)	EC50 Water flea (Daphnia Magna): 8.76 - 15.6 mg/l 48 Hours LC50 Rainbow trout, Donaldson trout (Oncorhynchus mykiss): 5.3 mg/l 96 Hours
Toluene	No data available
Ethylbenzene (100-41-4)	EC50 Water flea (Daphnia Magna): 1.37 - 4.4 mg/l 48 Hours LC50 Rainbow trout, Donaldson trout (Oncorhynchus mykiss): 4.2 mg/l 96 Hours)
Xylene	
Petroleum Distillate (8002-05-9)	LC50 Cutthroat trout (Oncorhynchus clarki): 2.1 - 4.3 mg/l 96 Hours
Ecotoxicity	Components of this product are hazardous to aquatic life. Bluegill LC50=17 mg/L/24H Shrimp LC50=4.3 ppm/96H Fathead minnow LC50=36.2 mg/L/96H Sunfish (freshwater) TLm=1180 mg/L/96H
Persistence and degradability:	Photochemically produced hydroxyl radicals degrade substance.
Bioaccumulation / Accumulation:	No data available.
Mobility in environmental media:	From soil, substance evaporates and is microbially biodegraded. In water, substance volatilizes and biodegrades.

SECTION 13 – DISPOSAL CONSIDERATIONS

This product is exempt as an EPA RCRA hazardous waste according to 40 CFR 261. It is the responsibility of the user to comply with federal, state and local regulations for disposal.

SECTION 14 – TRANSPORT INFORMATION

Land (DOT)

Basic shipping requirements:

UN Number:	1267
Proper Shipping Name:	Petroleum crude oil
Hazard Class:	3
Packing Group:	II

Additional Information:

Special Provisions:	144, B1, IB3, T2, TP1
Packaging Exceptions:	150
Packaging Non Bulk:	203
Packaging Bulk:	242
ERG Number:	128

Air (IATA)

Basic shipping requirements:

UN Number:	1267
Proper Shipping Name:	Petroleum crude oil
Hazard Class:	3
Packing Group:	II

Sea (IMDG)

Basic shipping requirements:

UN Number:	1267
Marine Pollutant:	Yes
Proper Shipping Name:	Petroleum Crude Oil
Hazard Class:	3

Packing Group: II



DOT



IATA



IMDG

SECTION 15 – REGULATORY INFORMATION

US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.
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US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De Minimis concentration

Benzene (CAS 71-43-2)	0.1 %
Ethylbenzene (CAS 100-41-4)	0.1 %
Hexane (CAS 110-54-3)	1.0 %
Petroleum Distillate (CAS 8002-05-9)	0.1 % N590 Substance is not eligible for the de minimis exemption except for the purposes of supplier notification requirements.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Benzene (CAS 71-43-2)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.
Hexane (CAS 110-54-3)	Listed.
Petroleum Distillate (CAS 8002-05-9) N590	Listed.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Reportable threshold

Petroleum Distillate (CAS 8002-05-9)	100 LBS N590
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CERCLA (Superfund) reportable quantity (lbs)

Petroleum Distillate: 100	
Hexane: 5000	
Benzene: 10	
Ethylbenzene: 1000	

Superfund Amendments and Reauthorization Act of 1986 (SARA)

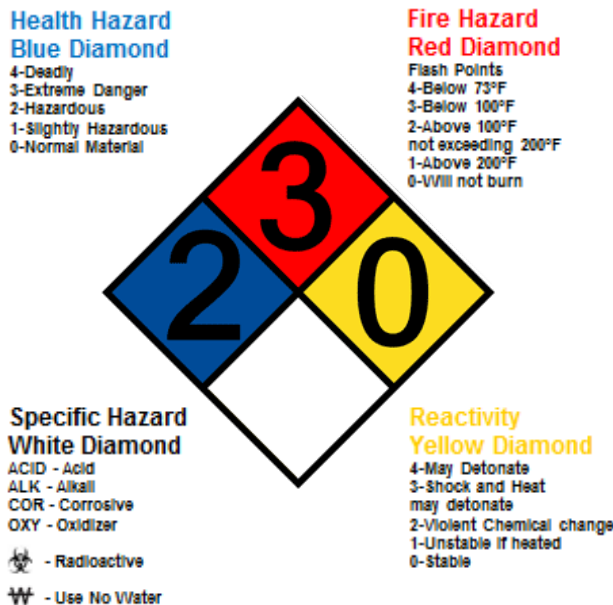
Hazard categories	Immediate Hazard – Yes
	Delayed Hazard – Yes
	Fire Hazard – Yes
	Pressure Hazard - No
	Reactivity Hazard – No

Country(s) 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 Chemicals 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
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	YES

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations	WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.	
US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance		
Benzene (CAS 71-43-2)	Listed.	
Ethylbenzene (CAS 100-41-4)	Listed.	
US - California Proposition 65 - CRT: Listed date/Carcinogenic substance		
Benzene (CAS 71-43-2)	Listed: February 27, 1987 Carcinogenic.	
Ethylbenzene (CAS 100-41-4)	Listed: June 11, 2004 Carcinogenic.	
US - California Proposition 65 - CRT: Listed date/Developmental toxin		
Benzene (CAS 71-43-2)	Listed: December 26, 1997 Developmental toxin.	
US - California Proposition 65 - CRT: Listed date/Male reproductive toxin		
Benzene (CAS 71-43-2)	Listed: December 26, 1997 Male reproductive toxin.	
US - New Jersey Community RTK (EHS Survey): Reportable threshold		
Benzene (CAS 71-43-2)	500 LBS	
Ethylbenzene (CAS 100-41-4)	500 LBS	
Hexane (CAS 110-54-3)	500 LBS	
Petroleum Distillate (CAS 8002-05-9)	500 LBS	
US - Pennsylvania RTK - Hazardous Substances: Listed substance		
Benzene (CAS 71-43-2)	Listed.	
Ethylbenzene (CAS 100-41-4)	Listed.	
Hexane (CAS 110-54-3)	Listed.	
Petroleum Distillate (CAS 8002-05-9)	Listed.	
US - Pennsylvania RTK - Hazardous Substances: Special hazard		
Benzene (CAS 71-43-2)	Special hazard.	

SECTION 16- OTHER INFORMATION



HAZARD RATINGS

	Health Hazard	Fire Hazard	Instability	Special Hazard
NFPA	2	3	0	NONE

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

NFPA Label colored diamond code: Blue - Health; Red - Flammability; Yellow - Instability; White - Special Hazards

	Health Hazard	Flammability	Physical Hazard	Personal Protection
HMIS	2	3	0	--

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

HMIS Label colored barcode: Blue - Health; Red - Flammability; Orange - Physical Hazards; White - Special

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.