


SAFETY DATA SHEET

DRAFT VERSION

1. Identification

Product identifier	Crude Oil (Heavy Paraffinic) - Sour	
Other means of identification	Not available.	
Recommended use	Fuel.	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Company name	Noble Energy, Inc.	
Address	1001 Noble Energy Way Houston, TX 77070 US US	
Telephone	Non-emergency Telephone:	720-587-2085
E-mail	SDSGLOBAL@nobleenergyinc.com	
Emergency phone number	24 Hour Emergency: Access code	1-760-476-3962 333053

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, inhalation	Category 2
	Germ cell mutagenicity	Category 1B
	Carcinogenicity	Category 1A
	Reproductive toxicity	Category 2
	Specific target organ toxicity, repeated exposure	Category 1 (blood, central nervous system)
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 2
OSHA defined hazards	Not classified.	
Label elements		
Signal word	Danger	
Hazard statement	Fatal if inhaled. May cause genetic defects. May cause cancer. Suspected of damaging fertility or the unborn child. Causes damage to organs (Blood, Central nervous system) through prolonged or repeated exposure. Toxic to aquatic life with long lasting effects.	
Precautionary statement		
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe gas/mist/vapors/spray. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment.	
Response	If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center/doctor. If exposed or concerned: Get medical advice/attention. Collect spillage.	
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.	
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.	

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Petroleum Distillate	8002-05-9	>90
n-Paraffins	64771-72-8	>75
i-Paraffins	8012-95-1	>20
Toluene	108-88-3	2 - 5
Xylene	1330-20-7	2 - 5
Hydrogen sulfide	7783-06-4	0 - 3
Benzene	71-43-2	0 - 2

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Skin contact	Wash skin with soap and water. Get medical attention promptly if symptoms occur after washing.
Eye contact	Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. Get medical attention if symptoms persist.
Ingestion	Seek medical advice.
Most important symptoms/effects, acute and delayed	Fatal if inhaled. May cause genetic defects. Suspected of damaging fertility or the unborn child. Causes damage to organs (Blood, Central nervous system) through prolonged or repeated exposure. May contain poisonous and flammable hydrogen sulfide vapor in container headspace. In high concentrations (500-1000 ppm), H ₂ S acts as a systemic poison causing unconsciousness and death.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Foam. Dry chemical powder. Carbon dioxide (CO ₂). Water fog.
Unsuitable extinguishing media	Do not use a solid water stream as it may scatter and spread fire.
Specific hazards arising from the chemical	Thermal decomposition or combustion may liberate toxic gases or fumes.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Specific methods	Move container from fire area if it can be done without risk.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Wear appropriate personal protective equipment (See Section 8). Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content, hydrogen sulfide (H ₂ S) and flammability.
Methods and materials for containment and cleaning up	Sweep up and place in a clearly labeled container for chemical waste. Caution: Contaminated surfaces may be slippery. Wash contact areas with soap and water. Large Spills: Sweep or scoop up and remove. Prevent runoff from entering drains, sewers, or streams.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Do not breath gas/vapor/spray. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Use only with adequate ventilation. May contain poisonous and flammable hydrogen sulfide vapor in container headspace.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed and in a well-ventilated place. Store away from incompatible materials. Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content, hydrogen sulfide (H₂S) and flammability.

8. Exposure controls/personal protection

Occupational exposure limits

U.S. - OSHA

Components	Type	Value
Benzene (CAS 71-43-2)	TWA	1 ppm

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	5 ppm
	TWA	1 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
i-Paraffins (CAS 8012-95-1)	PEL	5 mg/m ³	Mist.
Xylene (CAS 1330-20-7)	PEL	435 mg/m ³	
		100 ppm	

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value
Benzene (CAS 71-43-2)	Ceiling	25 ppm
	TWA	10 ppm
Hydrogen sulfide (CAS 7783-06-4)	Ceiling	20 ppm
Toluene (CAS 108-88-3)	Ceiling	300 ppm
	TWA	200 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Benzene (CAS 71-43-2)	STEL	2.5 ppm	
	TWA	0.5 ppm	
Hydrogen sulfide (CAS 7783-06-4)	STEL	5 ppm	
	TWA	1 ppm	
i-Paraffins (CAS 8012-95-1)	TWA	5 mg/m ³	Inhalable fraction.
Toluene (CAS 108-88-3)	TWA	20 ppm	
Xylene (CAS 1330-20-7)	STEL	150 ppm	
	TWA	100 ppm	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Benzene (CAS 71-43-2)	STEL	1 ppm	
	TWA	0.1 ppm	
Hydrogen sulfide (CAS 7783-06-4)	Ceiling	15 mg/m ³	
		10 ppm	
i-Paraffins (CAS 8012-95-1)	STEL	10 mg/m ³	Mist.
	TWA	5 mg/m ³	Mist.
Petroleum Distillate (CAS 8002-05-9)	Ceiling	1800 mg/m ³	
Toluene (CAS 108-88-3)	TWA	350 mg/m ³	
	STEL	560 mg/m ³	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
	TWA	150 ppm 375 mg/m ³ 100 ppm	

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Benzene (CAS 71-43-2)	25 µg/g	S-Phenylmercap- turic acid	Creatinine in urine	*
Toluene (CAS 108-88-3)	0.3 mg/g	o-Cresol, with hydrolysis	Creatinine in urine	*
	0.03 mg/l	Toluene	Urine	*
	0.02 mg/l	Toluene	Blood	*
Xylene (CAS 1330-20-7)	1.5 g/g	Methylhippuric acids	Creatinine in urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Benzene (CAS 71-43-2)

Can be absorbed through the skin.

Toluene (CAS 108-88-3)

Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Toluene (CAS 108-88-3)

Skin designation applies.

US ACGIH Threshold Limit Values: Skin designation

Benzene (CAS 71-43-2)

Can be absorbed through the skin.

Appropriate engineering controls

Ensure adequate ventilation, especially in confined areas. Provide easy access to water supply and eye wash facilities.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection

Chemical resistant gloves are recommended.

Other

Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

Respiratory protection

Hydrogen sulfide impairs olfactory nerve function above 20 ppm, odor warning property (rotten egg smell) lost at higher concentrations.

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister.

Thermal hazards

Not applicable.

General hygiene considerations

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.

9. Physical and chemical properties

Appearance	Black solid at room temperature.
Physical state	Solid.
Form	Solid at room temperature.
Color	Black.
Odor	Hydrocarbon.
Odor threshold	Not relevant.
pH	Not relevant.
Melting point/freezing point	102.2 °F (39 °C)
Initial boiling point and boiling range	365 °F (185 °C) @1 atm

Flash point	320.0 °F (160.0 °C) Pensky-Martens Closed Cup
Evaporation rate	Not relevant.
Flammability (solid, gas)	Will burn if involved in a fire.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	0.6 %
Flammability limit - upper (%)	6.5 %
Vapor pressure	0.75 kPa (20°C)
Vapor density	Solid at room temperature
Relative density	0.84 (20°C)
Solubility(ies)	
Solubility (water)	< 1 mg/l (20°C)
Partition coefficient (n-octanol/water)	Not relevant.
Auto-ignition temperature	392 °F (200 °C) estimated
Decomposition temperature	Not relevant.
Viscosity	< 2 cSt (40°C) 7.452 mm ² /s (40°C) 14.17 mm ² /s 25°C)
Other information	
Pour point	102.2 °F (39 °C)

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Elevated temperatures.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Ingestion	No harmful effects expected in amounts likely to be ingested by accident.
Inhalation	Fatal if inhaled. Prolonged exposure may cause chronic effects.
Skin contact	Prolonged or repeated contact may dry skin and cause irritation.
Eye contact	Direct contact with eyes may cause temporary irritation.

Symptoms related to the physical, chemical and toxicological characteristics Fatal if inhaled. Causes damage to organs (Blood, Central Nervous System) through prolonged or repeated exposure. Hydrogen sulfide impairs olfactory nerve function above 20 ppm, odor warning property (rotten egg smell) lost at higher concentrations.

Information on toxicological effects

Acute toxicity Fatal if inhaled.

Components	Species	Test Results
Benzene (CAS 71-43-2)		
Acute		
<i>Inhalation</i>		
LC50	Mouse	9980 ppm
	Rat	10000 ppm, 7 Hours
		10000 mg/l, 7 Hours
<i>Oral</i>		
LD50	Rat	3306 mg/kg

Components	Species	Test Results
Hydrogen sulfide (CAS 7783-06-4)		
Acute		
<i>Inhalation</i>		
LC100	Rat	2317 mg/m3, 3 Minutes 780 - 800 ppm, 10 Minutes
LC50	Mouse	940 mg/m3 634 ppm, 1 Hours
	Rat	950 mg/m3 712 ppm, 1 Hours 444 ppm, 4 Hours 335 ppm > 0.38 mg/l, 960 Minutes
Toluene (CAS 108-88-3)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	14.1 ml/kg
<i>Inhalation</i>		
LC50	Mouse	5320 ppm, 8 Hours 400 ppm, 24 Hours
	Rat	26700 ppm, 1 Hours 12200 ppm, 2 Hours 8000 ppm, 4 Hours
<i>Oral</i>		
LD50	Rat	2.6 g/kg
<i>Other</i>		
LD50	Mouse	59 mg/kg
	Rat	1332 mg/kg
Xylene (CAS 1330-20-7)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 43 g/kg
<i>Inhalation</i>		
LC50	Mouse	3907 mg/l, 6 Hours
	Rat	6350 mg/l, 4 Hours
<i>Oral</i>		
LD50	Mouse	1590 mg/kg
	Rat	3523 - 8600 mg/kg
<i>Other</i>		
LD50	Rat	3.8 mg/kg
Skin corrosion/irritation	Not classified.	
Serious eye damage/eye irritation	Not classified.	
Respiratory or skin sensitization		
Respiratory sensitization	Not classified.	
Skin sensitization	No data available.	
Germ cell mutagenicity	May cause genetic defects.	
Carcinogenicity		
IARC Monographs. Overall Evaluation of Carcinogenicity		
Benzene (CAS 71-43-2)	1 Carcinogenic to humans.	

Petroleum Distillate (CAS 8002-05-9)
Toluene (CAS 108-88-3)
Xylene (CAS 1330-20-7)

3 Not classifiable as to carcinogenicity to humans.
3 Not classifiable as to carcinogenicity to humans.
3 Not classifiable as to carcinogenicity to humans.

NTP Report on Carcinogens

Benzene (CAS 71-43-2)
i-Paraffins (CAS 8012-95-1)

Known To Be Human Carcinogen.
Known To Be Human Carcinogen.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Benzene (CAS 71-43-2)

Cancer

Reproductive toxicity

Suspected of damaging fertility or the unborn child.

Specific target organ toxicity - single exposure

Not classified.

Specific target organ toxicity - repeated exposure

Causes damage to organs (Blood, Central nervous system) through prolonged or repeated exposure.

Aspiration hazard

Not classified.

12. Ecological information

Ecotoxicity Toxic to aquatic life with long lasting effects.

Components	Species	Test Results
Benzene (CAS 71-43-2)		
Aquatic		
Crustacea	EC50	Water flea (Daphnia magna) 8.76 - 15.6 mg/l, 48 Hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss) 5.3 mg/l, 96 hours
		5 mg/l, 96 Hours
Hydrogen sulfide (CAS 7783-06-4)		
Aquatic		
Fish	LC50	Lake whitefish (Coregonus clupeaformis) 0.002 mg/l, 96 hours
		Rainbow trout,donaldson trout (Oncorhynchus mykiss) 0.007 mg/l, 96 hours
Petroleum Distillate (CAS 8002-05-9)		
Aquatic		
Fish	LC50	Cutthroat trout (Oncorhynchus clarki) 2.1 - 4.3 mg/l, 96 hours
Toluene (CAS 108-88-3)		
Aquatic		
Crustacea	EC50	Water flea (Daphnia magna) 5.46 - 9.83 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss) 5.89 - 7.81 mg/l, 96 hours
Xylene (CAS 1330-20-7)		
Aquatic		
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss) 6.702 - 10.032 mg/l, 96 hours

Persistence and degradability

Not established.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

Benzene (CAS 71-43-2) 2.13
Toluene (CAS 108-88-3) 2.73
Xylene (CAS 1330-20-7) 3.12 - 3.2

Mobility in soil

Not available.

Other adverse effects

Not established.

13. Disposal considerations

Disposal instructions

Do not discharge into drains, water courses or onto the ground. Discharge, treatment, or disposal may be subject to national, state, or local laws.

Hazardous waste code

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

US RCRA Hazardous Waste U List: Reference

Benzene (CAS 71-43-2)	U019
Hydrogen sulfide (CAS 7783-06-4)	U135
Toluene (CAS 108-88-3)	U220
Xylene (CAS 1330-20-7)	U239

Waste from residues / unused products Dispose of in accordance with local regulations.

Contaminated packaging Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information**DOT**

UN number	UN3077
UN proper shipping name	Environmentally hazardous substances, solid, n.o.s. (Benzene RQ = 1990 LBS)
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Label(s)	9
Packing group	III
Environmental hazards	
Marine pollutant	Yes
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	8, 146, 335, A112, B54, IB8, IP3, N20, T1, TP33
Packaging exceptions	155
Packaging non bulk	213
Packaging bulk	240

IATA

UN number	UN3077
UN proper shipping name	Environmentally hazardous substance, solid, n.o.s. (Benzene)
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Packing group	III
Environmental hazards	Yes
ERG Code	9L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN3077
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Benzene)
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-A, S-F
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

US federal regulations This product is hazardous according to OSHA 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Benzene (CAS 71-43-2)	Cancer Central nervous system Blood Aspiration
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Skin
Eye
respiratory tract irritation
Flammability

CERCLA Hazardous Substance List (40 CFR 302.4)

Benzene (CAS 71-43-2)	LISTED
Hydrogen sulfide (CAS 7783-06-4)	LISTED
Toluene (CAS 108-88-3)	LISTED
Xylene (CAS 1330-20-7)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

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

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity	Threshold planning quantity	Threshold planning quantity, lower value	Threshold planning quantity, upper value
Hydrogen sulfide	7783-06-4	100	500 lbs		

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Petroleum Distillate	8002-05-9	>90
Toluene	108-88-3	2 - 5
Xylene	1330-20-7	2 - 5
Hydrogen sulfide	7783-06-4	0 - 3
Benzene	71-43-2	0 - 2

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Benzene (CAS 71-43-2)
Petroleum Distillate (CAS 8002-05-9)
Toluene (CAS 108-88-3)
Xylene (CAS 1330-20-7)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Hydrogen sulfide (CAS 7783-06-4)

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Toluene (CAS 108-88-3) 6594

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Toluene (CAS 108-88-3) 35 %WV

DEA Exempt Chemical Mixtures Code Number

Toluene (CAS 108-88-3) 594

US state regulations WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

Benzene (CAS 71-43-2)
Hydrogen sulfide (CAS 7783-06-4)
i-Paraffins (CAS 8012-95-1)
Petroleum Distillate (CAS 8002-05-9)
Toluene (CAS 108-88-3)
Xylene (CAS 1330-20-7)

US. New Jersey Worker and Community Right-to-Know Act

Benzene (CAS 71-43-2)
Hydrogen sulfide (CAS 7783-06-4)
i-Paraffins (CAS 8012-95-1)
Petroleum Distillate (CAS 8002-05-9)

Toluene (CAS 108-88-3)

Xylene (CAS 1330-20-7)

US. Pennsylvania Worker and Community Right-to-Know Law

Benzene (CAS 71-43-2)

Hydrogen sulfide (CAS 7783-06-4)

i-Paraffins (CAS 8012-95-1)

Petroleum Distillate (CAS 8002-05-9)

Toluene (CAS 108-88-3)

Xylene (CAS 1330-20-7)

US. Rhode Island RTK

Benzene (CAS 71-43-2)

Hydrogen sulfide (CAS 7783-06-4)

Toluene (CAS 108-88-3)

Xylene (CAS 1330-20-7)

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Benzene (CAS 71-43-2)

Toluene (CAS 108-88-3)

International Inventories

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 Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
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 this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date Draft version.

Revision date Draft version.

Version # Draft version.

NFPA ratings



References

ECHA registered substances database
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
Registry of Toxic Effects of Chemical Substances (RTECS)

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