



SAFETY DATA SHEET

1. Identification

Product identifier	Crude Oil
Other means of identification	
SDS number	501 - GHS
Synonyms	Petroleum - Crude Oil, Petroleum Crude Oil Condensate
Recommended use	This product is intended for use as a refinery feedstock, fuel or for use in engineered processes. Use in other applications may result in higher exposures and require additional controls, such as local exhaust ventilation and personal protective equipment.
Recommended restrictions	No other uses are advised.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer/Supplier	Valero Marketing & Supply Company and Affiliates One Valero Way San Antonio, TX 78269-6000
General Assistance	210-345-4593
E-Mail	CorpHSE@valero.com
Contact Person	Industrial Hygienist
Emergency Telephone	24 Hour Emergency 866-565-5220 1-800-424-9300 (CHEMTREC USA)

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 1
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Germ cell mutagenicity	Category 1B
	Carcinogenicity	Category 1A
	Reproductive toxicity	Category 2
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Specific target organ toxicity, repeated exposure	Category 1 (hematopoietic system)
	Aspiration hazard	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 2
OSHA defined hazards	Not classified.	
Label elements		



Signal word

Danger

Hazard statement

Extremely flammable liquid and vapor. May be fatal if swallowed and enters airways. Causes skin irritation. Causes serious eye irritation. May cause drowsiness or dizziness. May cause genetic defects. May cause cancer. Suspected of damaging fertility or the unborn child. Causes damage to organs (hematopoietic system) through prolonged or repeated exposure. Very toxic to aquatic life. 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. 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 mist/vapors. 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. Wear protective gloves/protective clothing/eye protection/face protection.

Response

If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. 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 comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Get medical advice/attention. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. In case of fire: Use appropriate media to extinguish. Collect spillage.

Storage

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

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)

Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

Supplemental information

None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Petroleum Crude Oil	8002-05-9	95 - 100
n-Hexane	110-54-3	2 - 8
n-Butane	106-97-8	1 - 7
Pentane	109-66-0	1 - 6
Hexane (Other Isomers)	Mixture	1 - 5
Octane (All isomers)	111-65-9	1 - 5
n-Heptane	142-82-5	1 - 5
Benzene	71-43-2	0.2 - 5
Sulfur	7704-34-9	0.1 - 5
Cyclohexane	110-82-7	1 - 4
Methylcyclohexane	108-87-2	1 - 4
Propane	74-98-6	1 - 4
n-Nonane	111-84-2	1 - 4
Cyclopentane	287-92-3	1 - 3
Ethylbenzene	100-41-4	1 - 3
Xylene (o, m, p isomers)	1330-20-7	1 - 3
Hydrogen sulfide	7783-06-4	0.1 - 3
Toluene	108-88-3	1 - 2

Composition comments

Note: Components of hazardous substances/mixtures are listed for disclosure purposes. Ranges may represent maximum regulatory limits or apply to multiple product grades (see Synonyms - Section 1). Typical and actual concentrations of individual components may be substantially less than the maximum values shown or zero, depending on the product grade or specifications.

4. First-aid measures

Inhalation

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.

Skin contact

Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion

Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed	Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness or dizziness. Narcosis. Headache. Nausea, vomiting. Behavioral changes. Decrease in motor functions. Unconsciousness. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain. Cyanosis (blue tissue condition, nails, lips, and/or skin). Prolonged exposure may cause chronic effects.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.
5. Fire-fighting measures	
Suitable extinguishing media	Water fog. Foam. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Extremely flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Transfer by mechanical means such as vacuum truck to a salvage tank or other suitable container for recovery or safe disposal. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water. Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Use appropriate containment to avoid environmental contamination.

7. Handling and storage

Precautions for safe handling

Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content, hydrogen sulfide (H₂S) and flammability.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Explosion-proof general and local exhaust ventilation. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment.

Do not breathe mist/vapors. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.

For additional information on equipment bonding and grounding, refer to the Canadian Electrical Code in Canada, (CSA C22.1), or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity" or National Fire Protection Association (NFPA) 70, "National Electrical Code".

Conditions for safe storage, including any incompatibilities

Flammable liquid storage. Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Store in a cool, dry place out of direct sunlight. Store in tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

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)

Material	Type	Value
Crude Oil	PEL	2000 mg/m ³
		500 ppm
Cyclohexane (CAS 110-82-7)	PEL	1050 mg/m ³
		300 ppm
Ethylbenzene (CAS 100-41-4)	PEL	435 mg/m ³
		100 ppm
Methylcyclohexane (CAS 108-87-2)	PEL	2000 mg/m ³
		500 ppm
n-Heptane (CAS 142-82-5)	PEL	2000 mg/m ³
		500 ppm
n-Hexane (CAS 110-54-3)	PEL	1800 mg/m ³
		500 ppm

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

Components	Type	Value
Octane (All isomers) (CAS 111-65-9)	PEL	2350 mg/m3
		500 ppm
Pentane (CAS 109-66-0)	PEL	2950 mg/m3
		1000 ppm
Petroleum Crude Oil (CAS 8002-05-9)	PEL	2000 mg/m3
		500 ppm
Propane (CAS 74-98-6)	PEL	1800 mg/m3
		1000 ppm
Xylene (o, m, p isomers) (CAS 1330-20-7)	PEL	435 mg/m3
		100 ppm

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

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

US. ACGIH Threshold Limit Values

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	2.5 ppm
		TWA
Cyclohexane (CAS 110-82-7)	TWA	100 ppm
Cyclopentane (CAS 287-92-3)	TWA	600 ppm
Ethylbenzene (CAS 100-41-4)	TWA	20 ppm
Hexane (Other Isomers)	STEL	1000 ppm
		TWA
Hydrogen sulfide (CAS 7783-06-4)	STEL	5 ppm
		TWA
Methylcyclohexane (CAS 108-87-2)	TWA	400 ppm
n-Butane (CAS 106-97-8)	STEL	1000 ppm
n-Heptane (CAS 142-82-5)	STEL	500 ppm
		TWA
n-Hexane (CAS 110-54-3)	STEL	1000 ppm
		TWA
n-Nonane (CAS 111-84-2)	TWA	200 ppm
Octane (All isomers) (CAS 111-65-9)	TWA	300 ppm
Pentane (CAS 109-66-0)	TWA	1000 ppm
Toluene (CAS 108-88-3)	TWA	20 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Xylene (o, m, p isomers) (CAS 1330-20-7)	STEL	150 ppm
	TWA	100 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Material	Type	Value
Crude Oil	Ceiling	1800 mg/m3
	TWA	350 mg/m3
Components	Type	Value
Benzene (CAS 71-43-2)	STEL	1 ppm
	TWA	0.1 ppm
Cyclohexane (CAS 110-82-7)	TWA	1050 mg/m3
		300 ppm
Cyclopentane (CAS 287-92-3)	TWA	1720 mg/m3
		600 ppm
Ethylbenzene (CAS 100-41-4)	STEL	545 mg/m3
		125 ppm
	TWA	435 mg/m3
		100 ppm
Hexane (Other Isomers)	Ceiling	1800 mg/m3
		510 ppm
	TWA	350 mg/m3
		100 ppm
Hydrogen sulfide (CAS 7783-06-4)	Ceiling	15 mg/m3
		10 ppm
Methylcyclohexane (CAS 108-87-2)	TWA	1600 mg/m3
		400 ppm
n-Butane (CAS 106-97-8)	TWA	1900 mg/m3
		800 ppm
n-Heptane (CAS 142-82-5)	Ceiling	1800 mg/m3
		440 ppm
	TWA	350 mg/m3
		85 ppm
n-Hexane (CAS 110-54-3)	Ceiling	1800 mg/m3
		510 ppm
	TWA	180 mg/m3
		50 ppm
n-Nonane (CAS 111-84-2)	TWA	1050 mg/m3
		200 ppm
Octane (All isomers) (CAS 111-65-9)	Ceiling	1800 mg/m3
		385 ppm
	TWA	350 mg/m3
		75 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Pentane (CAS 109-66-0)	Ceiling	1800 mg/m ³ 610 ppm
	TWA	350 mg/m ³ 120 ppm
	Ceiling	1800 mg/m ³
Petroleum Crude Oil (CAS 8002-05-9)	TWA	350 mg/m ³
	TWA	1800 mg/m ³ 1000 ppm
Toluene (CAS 108-88-3)	STEL	560 mg/m ³ 150 ppm
	TWA	375 mg/m ³ 100 ppm
	STEL	655 mg/m ³ 150 ppm
Xylene (o, m, p isomers) (CAS 1330-20-7)	TWA	435 mg/m ³ 100 ppm

Biological limit values
ACGIH

Components	Value	Determinant	Specimen	Sampling Time
Benzene (CAS 71-43-2)	500 µg/g	t,t-Muconic acid	Creatinine in urine	*

ACGIH Biological Exposure Indices

Material	Value	Determinant	Specimen	Sampling Time
Crude Oil	2.5 µg/l	1-Hydroxypyrene, with hydrolysis (1-HP)	Urine	*

Components	Value	Determinant	Specimen	Sampling Time
Benzene (CAS 71-43-2)	25 µg/g	S-Phenylmercapturic acid	Creatinine in urine	*
Ethylbenzene (CAS 100-41-4)	0.15 g/g	Sum of mandelic acid and phenylglyoxylic acid	Creatinine in urine	*
n-Hexane (CAS 110-54-3)	0.5 mg/l	2,5-Hexanedione, without hydrolysis	Urine	*
Petroleum Crude Oil (CAS 8002-05-9)	2.5 µg/l	1-Hydroxypyrene, with hydrolysis (1-HP)	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 (o, m, p isomers) (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)

n-Hexane (CAS 110-54-3)

Toluene (CAS 108-88-3)

Can be absorbed through the skin.

Can be absorbed through the skin.

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)

Danger of cutaneous absorption

n-Hexane (CAS 110-54-3)

Danger of cutaneous absorption

Appropriate engineering controls

Explosion-proof general and local exhaust ventilation. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station and safety shower.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles). Wear face shield if there is risk of splashes.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves.

Skin protection

Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection

Chemical respirator with organic vapor cartridge and full facepiece. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. Wear air-supplied mask in confined areas.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements. When using do not 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.

9. Physical and chemical properties

Appearance

Physical state

Liquid.

Form

Liquid.

Color

Light yellow to black.

Odor

Hydrocarbon. Characteristic Gasoline Odor (Strong).

Odor threshold

Not available.

pH

Not available.

Melting point/freezing point

-68.69 °F (-55.94 °C) Weighted average

Initial boiling point and boiling range

-43.6 - 195.44 °F (-42 - 90.8 °C)

Flash point

32 - 104 °F (0 - 40 °C) Closed Cup

Evaporation rate

1 Compared with Butyl Acetate

Flammability (solid, gas)

Not applicable.

Upper/lower flammability or explosive limits

Explosive limit - lower (%)

1 %

Explosive limit - upper (%)

7 %

Vapor pressure

Not available.

Vapor density

3.98 Weighted average (Air = 1)

Relative density

0.77 (Water = 1)(@ 60 F)

Solubility(ies)

Solubility (water)

Very slightly soluble in cold water, hot water.

Partition coefficient (n-octanol/water)

Not available.

Crude Oil

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Prepared by 3E Company

Auto-ignition temperature > 849.2 °F (> 454 °C)

Decomposition temperature Not available.

Viscosity Not available.

Other information

Density 0.832 - 0.901 g/cm³ at 20 °C

Explosive properties Not explosive.

Oxidizing properties Not oxidizing.

Percent volatile Essentially 100%

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 Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Incompatible materials Strong acids. Strong oxidizing agents. Alkalis. Halogens.

Hazardous decomposition products Hydrogen sulfide.

11. Toxicological information

Information on likely routes of exposure

Inhalation May cause drowsiness or dizziness. Headache. Nausea, vomiting. Prolonged inhalation may be harmful.

Skin contact Causes skin irritation.

Eye contact Causes serious eye irritation.

Ingestion Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.

Symptoms related to the physical, chemical and toxicological characteristics Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness or dizziness. Narcosis. Headache. Nausea, vomiting. Behavioral changes. Decrease in motor functions. Unconsciousness. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain. Cyanosis (blue tissue condition, nails, lips, and/or skin).

Information on toxicological effects

Acute toxicity May be fatal if swallowed and enters airways.

Components	Species	Test Results
Benzene (CAS 71-43-2)		
<u>Acute</u>		
Oral		
LD50	Rat	930 mg/kg
Cyclohexane (CAS 110-82-7)		
<u>Acute</u>		
Oral		
LD50	Rat	12710 mg/kg
Ethylbenzene (CAS 100-41-4)		
<u>Acute</u>		
Dermal		
LD50	Rabbit	15400 mg/kg
Inhalation		
LC50	Rat	17.4 mg/l, 4 hours
Oral		
LD50	Rat	3500 - 4700 mg/kg

Components	Species	Test Results
Hydrogen sulfide (CAS 7783-06-4)		
<u>Acute</u>		
Inhalation		
Gas		
LC50	Rat	444 ppm, 4 Hours
n-Butane (CAS 106-97-8)		
<u>Acute</u>		
Inhalation		
LC50	Rat	658 mg/l, 4 Hours
n-Heptane (CAS 142-82-5)		
<u>Acute</u>		
Inhalation		
Vapor		
LC50	Rat	> 29.29 mg/l, 4 Hours
Oral		
LD50	Rat	15000 mg/kg
n-Hexane (CAS 110-54-3)		
<u>Acute</u>		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Inhalation		
Vapor		
LC50	Mouse, Rat	169.2 mg/l, 4 Hours
Oral		
LD50	Rat	28710 mg/kg
Pentane (CAS 109-66-0)		
Other		
NOAEL	Rat	> 1000 mg/kg/day
<u>Acute</u>		
Dermal		
LD50	Rabbit	3000 mg/kg/day
Inhalation		
LC50	Rat	18 mg/l, 4 Hours
Oral		
LD50	Rat	> 2000 mg/kg/day
<u>Chronic</u>		
Other		
NOAEL	Rat	20 mg/l
Petroleum Crude Oil (CAS 8002-05-9)		
<u>Acute</u>		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Oral		
LD50	Rat	> 5000 mg/kg
Propane (CAS 74-98-6)		
<u>Acute</u>		
Inhalation		
Gas		
LC50	Rat	> 80000 ppm, 15 Minutes

Components	Species	Test Results
Sulfur (CAS 7704-34-9)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Inhalation		
LC50	Rat	> 5.43 g/m3, 4 Hours
Oral		
LD50	Rat	> 2000 mg/kg
Toluene (CAS 108-88-3)		
Acute		
Dermal		
LD50	Rabbit	12200 mg/kg
Inhalation		
<i>Vapor</i>		
LC50	Rat	28.1 mg/l, 4 Hours
Xylene (o, m, p isomers) (CAS 1330-20-7)		
Acute		
Oral		
LD50	Rat	3523 mg/kg
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Causes serious eye irritation.	
Respiratory or skin sensitization		
Respiratory sensitization	Not a respiratory sensitizer.	
Skin sensitization	This product is not expected to cause skin sensitization.	
Germ cell mutagenicity	May cause genetic defects.	
Carcinogenicity	May cause cancer.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Benzene (CAS 71-43-2)	1 Carcinogenic to humans.	
Ethylbenzene (CAS 100-41-4)	2B Possibly carcinogenic to humans.	
Petroleum Crude Oil (CAS 8002-05-9)	3 Not classifiable as to carcinogenicity to humans.	
Toluene (CAS 108-88-3)	3 Not classifiable as to carcinogenicity to humans.	
Xylene (o, m, p isomers) (CAS 1330-20-7)	3 Not classifiable as to carcinogenicity to humans.	
NTP Report on Carcinogens		
Benzene (CAS 71-43-2)	Known To Be Human Carcinogen.	
Petroleum Crude Oil (CAS 8002-05-9)	Known To Be Human Carcinogen.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)		
Benzene (CAS 71-43-2)	Cancer	
Reproductive toxicity	Components in this product have been shown to cause birth defects and reproductive disorders in laboratory animals. Suspected of damaging fertility or the unborn child.	
Specific target organ toxicity - single exposure	May cause drowsiness or dizziness.	
Specific target organ toxicity - repeated exposure	Causes damage to organs (hematopoietic system) through prolonged or repeated exposure.	
Aspiration hazard	May be fatal if swallowed and enters airways.	
Chronic effects	Prolonged inhalation may be harmful. Causes damage to organs through prolonged or repeated exposure. Prolonged exposure may cause chronic effects.	
Further information	Hydrogen sulfide, a highly toxic gas, may be present. Signs and symptoms of overexposure to hydrogen sulfide include respiratory and eye irritation, dizziness, nausea, coughing, a sensation of dryness and pain in the nose, and loss of consciousness. Odor does not provide a reliable indicator of the presence of hazardous levels in the atmosphere.	

12. Ecological information

Ecotoxicity

Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Components		Species	Test Results
Cyclohexane (CAS 110-82-7)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	0.9 mg/l, 48 hours
<i>Acute</i>			
Fish	LC50	Fathead minnow (Pimephales promelas)	3.961 - 5.181 mg/l, 96 hours
Cyclopentane (CAS 287-92-3)			
Aquatic			
<i>Acute</i>			
Crustacea	EC50	Daphnia magna	10.5 mg/l, 48 hours
Ethylbenzene (CAS 100-41-4)			
Aquatic			
<i>Acute</i>			
Crustacea	EC50	Water flea (Daphnia magna)	1.81 - 2.38 mg/l, 48 hours
Fish	LC50	Rainbow trout, donaldson trout (Oncorhynchus mykiss)	4.2 mg/l, 96 hours
<i>Chronic</i>			
Crustacea	EC50	Ceriodaphnia dubia	3.6 mg/l, 7 days
Hydrogen sulfide (CAS 7783-06-4)			
Aquatic			
<i>Acute</i>			
Crustacea	EC50	Crustacea	0.042 mg/l, 48 Hours
Fish	LC50	Fathead minnow (Pimephales promelas)	0.0243 mg/l, 96 hours
Methylcyclohexane (CAS 108-87-2)			
Aquatic			
<i>Acute</i>			
Fish	LC50	Golden shiner (Notemigonus crysoleucas)	25 - 65 mg/l, 96 hours
n-Hexane (CAS 110-54-3)			
Aquatic			
<i>Acute</i>			
Crustacea	LC50	Daphnia magna	2.1 mg/l, 48 hours
Fish	LC50	Pimephales promelas	2.5 mg/l, 96 hours
Octane (All isomers) (CAS 111-65-9)			
Aquatic			
Crustacea	LC50	Daphnia magna	0.38 mg/l, 48 hours
Pentane (CAS 109-66-0)			
<i>Acute</i>			
	EC50	Selenastrum capricornutum (new Pseudokirchneriella subcapita)	7.51 mg/l, 72 Hours
Aquatic			
<i>Acute</i>			
Crustacea	EC50	Daphnia magna	2.7 mg/l, 48 Hours
Fish	LC50	Oncorhynchus mykiss	4.26 mg/l, 96 Hours
Petroleum Crude Oil (CAS 8002-05-9)			
Aquatic			
Fish	LC50	Cutthroat trout (Oncorhynchus clarki)	2.1 - 4.3 mg/l, 96 hours

Components	Species		Test Results
Toluene (CAS 108-88-3)			
Aquatic			
<i>Acute</i>			
Crustacea	EC50	Daphnia magna	11.5 mg/l, 48 hours
Fish	LC50	Oncorhynchus kisutch	5.5 mg/l, 96 hours
<i>Chronic</i>			
Crustacea	NOEC	Ceriodaphnia dubia	0.74 mg/l, 7 days
Fish	NOEC	Oncorhynchus kisutch	1.4 mg/l, 40 days
Xylene (o, m, p isomers) (CAS 1330-20-7)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	2.6 mg/l, 96 hours

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

Benzene (CAS 71-43-2)	2.13
Cyclohexane (CAS 110-82-7)	3.44
Cyclopentane (CAS 287-92-3)	3
Ethylbenzene (CAS 100-41-4)	3.15
Hexane (Other Isomers)	3.6
Methylcyclohexane (CAS 108-87-2)	3.61
Octane (All isomers) (CAS 111-65-9)	5.18
Pentane (CAS 109-66-0)	3.39
Toluene (CAS 108-88-3)	2.73
n-Butane (CAS 106-97-8)	2.89
n-Heptane (CAS 142-82-5)	4.66
n-Hexane (CAS 110-54-3)	3.9
n-Nonane (CAS 111-84-2)	5.65

Mobility in soil No data available.

Other adverse effects Oil spills are generally hazardous to the environment.

13. Disposal considerations

Disposal instructions Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code D001: Waste Flammable material with a flash point <140 F
D018: Waste Benzene
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1267
UN proper shipping name	Petroleum crude oil
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3

Packing group	I
Environmental hazards	
Marine pollutant	Yes
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	144, 357, T11, TP1, TP8
Packaging exceptions	150
Packaging non bulk	201
Packaging bulk	243

IATA

UN number	UN1267
UN proper shipping name	Petroleum crude oil
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	I
Environmental hazards	Yes
ERG Code	3L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1267
UN proper shipping name	PETROLEUM CRUDE OIL
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	I
Environmental hazards	
Marine pollutant	Yes
EmS	F-E, S-E
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 However, this product is a liquid and if transported in bulk covered under MARPOL 73/78, Annex I.

General information IMDG Regulated Marine Pollutant. DOT Regulated Marine Pollutant.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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

n-Nonane (CAS 111-84-2) 1.0 % One-Time Export Notification only.

CERCLA Hazardous Substance List (40 CFR 302.4)

Benzene (CAS 71-43-2)	Listed.
Cyclohexane (CAS 110-82-7)	Listed.
Cyclopentane (CAS 287-92-3)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.
Hexane (Other Isomers) (CAS Mixture)	Listed.
Hydrogen sulfide (CAS 7783-06-4)	Listed.
Methylcyclohexane (CAS 108-87-2)	Listed.
n-Butane (CAS 106-97-8)	Listed.
n-Heptane (CAS 142-82-5)	Listed.
n-Hexane (CAS 110-54-3)	Listed.
n-Nonane (CAS 111-84-2)	Listed.
Octane (All isomers) (CAS 111-65-9)	Listed.
Pentane (CAS 109-66-0)	Listed.
Petroleum Crude Oil (CAS 8002-05-9)	Listed.
Propane (CAS 74-98-6)	Listed.
Toluene (CAS 108-88-3)	Listed.
Xylene (o, m, p isomers) (CAS 1330-20-7)	Listed.

SARA 304 Emergency release notification

Hydrogen sulfide (CAS 7783-06-4) 100 LBS

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Benzene (CAS 71-43-2)

Cancer
 Central nervous system
 Blood
 Aspiration
 Skin
 Eye
 respiratory tract irritation
 Flammability

Toxic Substances Control Act (TSCA)

All components of the mixture on the TSCA 8(b) inventory are designated "active".

Superfund Amendments and Reauthorization Act of 1986 (SARA)**SARA 302 Extremely hazardous substance**

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

SARA 311/312 Hazardous chemical

Yes

Classified hazard categories

Flammable (gases, aerosols, liquids, or solids)
 Skin corrosion or irritation
 Serious eye damage or eye irritation
 Germ cell mutagenicity
 Carcinogenicity
 Reproductive toxicity
 Specific target organ toxicity (single or repeated exposure)
 Aspiration hazard
 Hazard not otherwise classified (HNOC)

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Benzene	71-43-2	0.2 - 5
Cyclohexane	110-82-7	1 - 4
Ethylbenzene	100-41-4	1 - 3
Hydrogen sulfide	7783-06-4	0.1 - 3
n-Hexane	110-54-3	2 - 8
Petroleum Crude Oil	8002-05-9	95 - 100
Toluene	108-88-3	1 - 2
Xylene (o, m, p isomers)	1330-20-7	1 - 3

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Benzene (CAS 71-43-2)
 Ethylbenzene (CAS 100-41-4)
 n-Hexane (CAS 110-54-3)
 Petroleum Crude Oil (CAS 8002-05-9)
 Toluene (CAS 108-88-3)
 Xylene (o, m, p isomers) (CAS 1330-20-7)

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

Hydrogen sulfide (CAS 7783-06-4)
 n-Butane (CAS 106-97-8)
 Pentane (CAS 109-66-0)
 Propane (CAS 74-98-6)

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130)

Toxic pollutant

Safe Drinking Water Act (SDWA)

Contains component(s) regulated under the Safe Drinking Water Act.

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

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace

Hydrogen sulfide (CAS 7783-06-4) High priority

US state regulations

US. Massachusetts RTK - Substance List

Benzene (CAS 71-43-2)
Cyclohexane (CAS 110-82-7)
Cyclopentane (CAS 287-92-3)
Ethylbenzene (CAS 100-41-4)
Hexane (Other Isomers) (CAS Mixture)
Hydrogen sulfide (CAS 7783-06-4)
Methylcyclohexane (CAS 108-87-2)
n-Butane (CAS 106-97-8)
n-Heptane (CAS 142-82-5)
n-Hexane (CAS 110-54-3)
n-Nonane (CAS 111-84-2)
Octane (All isomers) (CAS 111-65-9)
Pentane (CAS 109-66-0)
Petroleum Crude Oil (CAS 8002-05-9)
Propane (CAS 74-98-6)
Sulfur (CAS 7704-34-9)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

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

Benzene (CAS 71-43-2)
Cyclohexane (CAS 110-82-7)
Cyclopentane (CAS 287-92-3)
Ethylbenzene (CAS 100-41-4)
Hydrogen sulfide (CAS 7783-06-4)
Methylcyclohexane (CAS 108-87-2)
n-Butane (CAS 106-97-8)
n-Heptane (CAS 142-82-5)
n-Hexane (CAS 110-54-3)
n-Nonane (CAS 111-84-2)
Octane (All isomers) (CAS 111-65-9)
Pentane (CAS 109-66-0)
Petroleum Crude Oil (CAS 8002-05-9)
Propane (CAS 74-98-6)
Sulfur (CAS 7704-34-9)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

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

Benzene (CAS 71-43-2)
Cyclohexane (CAS 110-82-7)
Cyclopentane (CAS 287-92-3)
Ethylbenzene (CAS 100-41-4)
Hexane (Other Isomers) (CAS Mixture)
Hydrogen sulfide (CAS 7783-06-4)
Methylcyclohexane (CAS 108-87-2)
n-Butane (CAS 106-97-8)
n-Heptane (CAS 142-82-5)
n-Hexane (CAS 110-54-3)
n-Nonane (CAS 111-84-2)
Octane (All isomers) (CAS 111-65-9)
Pentane (CAS 109-66-0)
Petroleum Crude Oil (CAS 8002-05-9)
Propane (CAS 74-98-6)
Sulfur (CAS 7704-34-9)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

US. Rhode Island RTK

Benzene (CAS 71-43-2)
Cyclohexane (CAS 110-82-7)
Cyclopentane (CAS 287-92-3)
Ethylbenzene (CAS 100-41-4)
Hydrogen sulfide (CAS 7783-06-4)
Methylcyclohexane (CAS 108-87-2)
n-Butane (CAS 106-97-8)
n-Heptane (CAS 142-82-5)
n-Hexane (CAS 110-54-3)
n-Nonane (CAS 111-84-2)
Octane (All isomers) (CAS 111-65-9)
Pentane (CAS 109-66-0)
Petroleum Crude Oil (CAS 8002-05-9)
Propane (CAS 74-98-6)
Sulfur (CAS 7704-34-9)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

California Proposition 65



WARNING: This product can expose you to chemicals including Benzene, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California Proposition 65 - CRT: Listed date/Carcinogenic substance

Benzene (CAS 71-43-2) Listed: February 27, 1987
Ethylbenzene (CAS 100-41-4) Listed: June 11, 2004

California Proposition 65 - CRT: Listed date/Developmental toxin

Benzene (CAS 71-43-2) Listed: December 26, 1997
Toluene (CAS 108-88-3) Listed: January 1, 1991

California Proposition 65 - CRT: Listed date/Male reproductive toxin

Benzene (CAS 71-43-2) Listed: December 26, 1997
n-Hexane (CAS 110-54-3) Listed: December 15, 2017

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Benzene (CAS 71-43-2)
Cyclohexane (CAS 110-82-7)
Ethylbenzene (CAS 100-41-4)
Hydrogen sulfide (CAS 7783-06-4)
n-Butane (CAS 106-97-8)
n-Heptane (CAS 142-82-5)
n-Hexane (CAS 110-54-3)
Octane (All isomers) (CAS 111-65-9)
Pentane (CAS 109-66-0)
Petroleum Crude Oil (CAS 8002-05-9)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	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

Country(s) or region	Inventory name	On inventory (yes/no)*
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	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)

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	27-June-2013
Revision date	30-March-2022
Version #	04
NFPA ratings	



Disclaimer

The information in this Safety Data Sheet (SDS) was obtained from sources believed to be reliable and accurate, and is not represented as being absolutely complete. The end user of this product has the responsibility for evaluating the adequacy of the data for the intended application and conditions of use; for determining the safety, toxicity, regulatory requirements, and suitability of the product under these conditions; and for obtaining additional or clarifying data where uncertainty exists. The data serves as general guidance only, and is to be used in combination with professional judgement of persons experienced in a specific application, use or process; and additional data may be required. Valero Marketing & Supply Co., (Valero) provides this data without any warranty, expressed or implied regarding its correctness or accuracy; and does not assume any liability arising out of product handling, storage, use or disposal by others.