

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR
1910.1200

Version 5.0

Revision Date: 09/27/2016

Print Date: 09/28/2016

SECTION 1. IDENTIFICATION

Product name : Albian Vacuum Bottoms

Product code : 001D3710

Manufacturer or supplier's details

Manufacturer/Supplier : **Deer Park Refining**
PO Box 4453
HOUSTON TX 77210-4453
USA

SDS Request : (+1) 877-276-7285
Customer Service :

Emergency telephone number

Spill Information : +1-877-504-9351
Health Information : +1-877-242-7400

Recommended use of the chemical and restrictions on use

Recommended use : Refinery Feedstock.

Restrictions on use : This product must not be used in applications other than those listed in Section 1 without first seeking the advice of the supplier.

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids : Category 1

Aspiration hazard : Category 1

Eye irritation : Category 2

Specific target organ toxicity
- single exposure (Inhalation) : Category 3 (Central nervous system (CNS).)

Carcinogenicity : Category 1B

Specific target organ toxicity
- repeated exposure : Category 2 (Blood, Liver., thymus, spleen)

Chronic aquatic toxicity : Category 2

GHS label elements

Hazard pictograms :



Signal word : Danger

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- Hazard statements : PHYSICAL HAZARDS:
H224 Extremely flammable liquid and vapour.
HEALTH HAZARDS:
H304 May be fatal if swallowed and enters airways.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.
Central nervous system (CNS).
H350 May cause cancer.
H373 May cause damage to organs through prolonged or repeated exposure.
Blood
Liver.
thymus
spleen
ENVIRONMENTAL HAZARDS:
H411 Toxic to aquatic life with long lasting effects.
- Precautionary statements : **Prevention:**
P201 Obtain special instructions before use.
P210 Keep away from heat/sparks/open flames/hot surfaces.
No smoking.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P331 Do NOT induce vomiting.
Disposal:
P501 Dispose of contents and container to appropriate waste site or reclaimer in accordance with local and national regulations.

Other hazards which do not result in classification

Hydrogen sulphide (H₂S), an extremely flammable and toxic gas, and other hazardous vapours may evolve and collect in the headspace of storage tanks, transport vessels and other enclosed containers.

May ignite on surfaces at temperatures above auto-ignition temperature.

Flammable vapours may be present even at temperatures below the flash point.

This material is a static accumulator.

Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.

If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.

The classification of this material is based on OSHA HCS 2012 criteria.

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SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

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Hazardous components

Chemical name	Synonyms	CAS-No.	Concentration (%)
crude oil	Petroleum	8002-05-9	<= 100

Hydrogen sulphide may be present both in the liquid and the vapour. Composition is complex and varies with the source of the crude oil and the contributing process plants at that time.

Further information

Contains:

Chemical name	Identification number	Concentration [%]
n-Hexane	110-54-3, 203-777-6	0 - 5
toluene	108-88-3, 203-625-9	0 - 4
cyclohexane	110-82-7, 203-806-2	0 - 3
benzene	71-43-2, 200-753-7	0 - 2
Ethylbenzene	100-41-4, 202-849-4	0 - 1
cumene	98-82-8, 202-704-5	0 - 1
Naphthalene	91-20-3, 202-049-5	0 - 0.5
Hydrogen sulfide	7783-06-4, 231-977-3	0 - 0.1

SECTION 4. FIRST-AID MEASURES

- General advice : Vapourisation of H₂S that has been trapped in clothing can be dangerous to rescuers. Maintain respiratory protection to avoid contamination from the victim to rescuer. Mechanical ventilation should be used to resuscitate if at all possible.
- If inhaled : Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.
- In case of skin contact : Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.
- In case of eye contact : Flush eyes with water while holding eyelids open. Rest eyes for 30 minutes. If redness, burning, blurred vision, or swelling persist transport to the nearest medical facility for additional treatment.
- If swallowed : If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Give nothing by mouth. Do NOT induce vomiting. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing.
- Most important symptoms and effects, both acute and delayed : Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance. Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.

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Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.
If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever.
The onset of respiratory symptoms may be delayed for several hours after exposure.
Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache and nausea.
Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.
Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.

- Protection of first-aiders : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.
- Immediate medical attention, special treatment : Hydrogen sulphide (H₂S) - CNS asphyxiant. May cause rhinitis, bronchitis and occasionally pulmonary oedema after severe exposure. CONSIDER: Oxygen therapy. Consult a Poison Control Center for guidance.
Call a doctor or poison control center for guidance.
Potential for chemical pneumonitis.

Hydrogen sulphide (H₂S) - CNS asphyxiant. May cause rhinitis, bronchitis and occasionally pulmonary oedema after severe exposure. CONSIDER: Oxygen therapy. Consult a Poison Control Center for guidance.

SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
- Unsuitable extinguishing media : Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the fire.
Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.
- Specific hazards during fire-fighting : Hazardous combustion products may include:
A complex mixture of airborne solid and liquid particulates and gases (smoke).
Carbon monoxide.
Oxides of nitrogen
Oxides of sulphur.
Unidentified organic and inorganic compounds.
Flammable vapours may be present even at temperatures below the flash point.
The vapour is heavier than air, spreads along the ground and distant ignition is possible.
- Hydrogen sulphide (H₂S) and other toxic sulphur oxides may

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be given off when this material is heated. Do not depend on sense of smell for warning.

- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Further information : Keep adjacent containers cool by spraying with water. If possible remove containers from the danger zone. If the fire cannot be extinguished the only course of action is to evacuate immediately.
- Special protective equipment for firefighters : Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained.
- : May ignite on surfaces at temperatures above auto-ignition temperature.
Do not breathe fumes, vapour.
Do not operate electrical equipment.
- Environmental precautions : Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.
- Methods and materials for containment and cleaning up : For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely
For small liquid spills (< 1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely Remove contaminated soil and dispose of safely.
- Observe all relevant local and international regulations.
Remove contaminated clothing.

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Evacuate the area of all non-essential personnel.
Avoid contact with skin, eyes and clothing.
Ventilate contaminated area thoroughly.

Additional advice : For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet.
Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.
For guidance on disposal of spilled material see Chapter 13 of this Safety Data Sheet.
Local authorities should be advised if significant spillages cannot be contained.
Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26.

U.S. regulations may require reporting releases of this material to the environment which exceed the reportable quantity (refer to Chapter 15) to the National Response Center at (800) 424-8802.

Under Section 311 of the Clean Water Act (CWA) this material is considered an oil. As such, spills into surface waters must be reported to the National Response Center at (800) 424-8802.

This material is covered by EPA's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Petroleum Exclusion. Therefore, releases to the environment may not be reportable under CERCLA.

SECTION 7. HANDLING AND STORAGE

Technical measures : Avoid breathing of or direct contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet.
Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.
Prevent spillages.
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.

Precautions for safe handling : Ensure that all local regulations regarding handling and storage facilities are followed.
When using do not eat or drink.
Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks.
The inherent toxic and olfactory (sense of smell) fatiguing properties of hydrogen sulphide require that air monitoring alarms be used if concentrations are expected to reach harmful levels such as in enclosed spaces, heated transport ves-

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sels and spill or leak situations. If the air concentration exceeds 10 ppm, the area should be evacuated unless respiratory protection is in use.
Never siphon by mouth.
The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Avoid exposure.
Use only non-sparking tools.
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.
Bulk storage tanks should be diked (bunded).

The inherent toxic and olfactory (sense of smell) fatiguing properties of hydrogen sulphide require that air monitoring alarms be used if concentrations are expected to reach harmful levels such as in enclosed spaces, heated transport vessels and spill or leak situations. If the air concentration exceeds 10 ppm, the area should be evacuated unless respiratory protection is in use.

Avoidance of contact : Strong oxidising agents.

Product Transfer : Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling (for large storage tanks) before opening hatches or manholes.

Avoid splash filling Keep containers closed when not in use.
Do not use compressed air for filling discharge or handling.
Contamination resulting from product transfer may give rise to light hydrocarbon vapour in the headspace of tanks that have previously contained gasoline. This vapour may explode if there is a source of ignition. Partly filled containers present a greater hazard than those that are full, therefore handling, transfer and sampling activities need special care.

Storage

Other data : Drum and small container storage:
Keep containers closed when not in use.
Drums should be stacked to a maximum of 3 high.
Use properly labeled and closable containers.
Packaged product must be kept tightly closed and stored in a diked (bunded) well-ventilated area, away from, ignition sources and other sources of heat.
Take suitable precautions when opening sealed containers, as pressure can build up during storage.
Tank storage:
Tanks must be specifically designed for use with this product.
Bulk storage tanks should be diked (bunded).
Locate tanks away from heat and other sources of ignition.
Cleaning, inspection and maintenance of storage tanks is a specialist operation, which requires the implementation of strict procedures and precautions.
Electrostatic charges will be generated during pumping.
Electrostatic discharge may cause fire. Ensure electrical con-

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tinuity by bonding and grounding (earthing) all equipment to reduce the risk.
The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flammable.
Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.

Packaging material : Suitable material: For containers, or container linings use mild steel, stainless steel., Aluminium may also be used for applications where it does not present an unnecessary fire hazard., Examples of suitable materials are: high density polyethylene (HDPE), polypropylene (PP), polyvinyl chloride (PVC), polyvinyl fluoride (PVDF), and fluoroelastomers (FKM), e.g. Viton, which have been specifically tested for compatibility with this product., For container linings, or coatings, use Epoxy (amine-cured), or Epoxy Novolac, or Phenolic Epoxy., For seals and gaskets use: fluoroelastomers (FKM), e.g. Viton A, B, or F , or Neoprene (CR), or nitrile (NBR, HNBR), or graphite, or expanded PTFE (e.g. Gore-Tex).
Unsuitable material: Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene., However, some may be suitable for glove materials.

Container Advice : Do not cut, drill, grind, weld or perform similar operations on or near containers. Containers, even those that have been emptied, can contain explosive vapours.

Specific use(s) : Not applicable
See additional references that provide safe handling practices for liquids that are determined to be static accumulators: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity).
IEC/TS 60079-32-1: Electrostatic hazards, guidance

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
crude oil	8002-05-9	TWA	500 ppm 2,000 mg/m ³	OSHA Z-1
		TWA	200 mg/m ³ (total hydrocarbon vapor)	ACGIH
n-Hexane	110-54-3	TWA	50 ppm	ACGIH

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		TWA	500 ppm 1,800 mg/m ³	OSHA Z-1
toluene	108-88-3	TWA	20 ppm	ACGIH
		TWA	200 ppm	OSHA Z-2
		CEIL	300 ppm	OSHA Z-2
		Peak	500 ppm	OSHA Z-2
cyclohexane	110-82-7	TWA	100 ppm	ACGIH
		TWA	300 ppm 1,050 mg/m ³	OSHA Z-1
benzene	71-43-2	TWA	0.5 ppm 1.6 mg/m ³	Shell Internal Standard (SIS) for 8-12 hour TWA.
		STEL	2.5 ppm 8 mg/m ³	Shell Internal Standard (SIS) for 15 min (STEL)
		TWA	0.5 ppm	ACGIH
		STEL	2.5 ppm	ACGIH
		PEL	1 ppm	OSHA CARC
		STEL	5 ppm	OSHA CARC
		TWA	10 ppm	OSHA Z-2
		CEIL	25 ppm	OSHA Z-2
		Peak	50 ppm	OSHA Z-2
Ethylbenzene	100-41-4	TWA	20 ppm	ACGIH
		TWA	100 ppm 435 mg/m ³	OSHA Z-1
cumene	98-82-8	TWA	50 ppm 245 mg/m ³	OSHA Z-1
		TWA	50 ppm	ACGIH
Naphthalene	91-20-3	TWA	10 ppm 50 mg/m ³	OSHA Z-1
		TWA	10 ppm	ACGIH
Hydrogen sulfide	7783-06-4	TWA	5 ppm 7 mg/m ³	2009/161/EU
	Further information: This value is for information where there is no national limit value available.			
		STEL	10 ppm 14 mg/m ³	2009/161/EU
	Further information: This value is for information where there is no national limit value available.			
		CEIL	20 ppm	OSHA Z-2
		Peak	50 ppm	OSHA Z-2
		TWA	1 ppm	ACGIH
		STEL	5 ppm	ACGIH

Biological occupational exposure limits

Component	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
n-Hexane	110-54-3	2,5-Hexanedi-one	Urine	End of shift at end of work-	0.4 mg/l	ACGIH BEI

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toluene	108-88-3	Toluene	In blood	week Prior to last shift of work-week	0.02 mg/l	ACGIH BEI
toluene		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI
toluene		o-Cresol	Urine	End of shift (As soon as possible after exposure ceases)	0.3.mg/g Creatinine	ACGIH BEI
benzene	71-43-2	S-Phenylmercapturic acid	Urine	End of shift (As soon as possible after exposure ceases)	25.µg/g creatinine	ACGIH BEI
benzene		t,t-Muconic acid	Urine	End of shift (As soon as possible after exposure ceases)	500.µg/g creatinine	ACGIH BEI
Ethylbenzene	100-41-4	Sum of mandelic acid and phenyl glyoxylic acid	Urine	End of shift (As soon as possible after exposure ceases)	0.15.g/g creatinine	ACGIH BEI
Ethylbenzene				End of shift	0,15.g/g creatinine	ACGIH BEI

Monitoring Methods

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.

Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.

Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods <http://www.cdc.gov/niosh/>

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods <http://www.osha.gov/>

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances

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<http://www.hse.gov.uk/>

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA) , Germany

<http://www.dguv.de/inhalt/index.jsp>

L'Institut National de Recherche et de Sécurité, (INRS), France <http://www.inrs.fr/accueil>

Engineering measures : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:
Use sealed systems as far as possible.
Firewater monitors and deluge systems are recommended.
Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.
Local exhaust ventilation is recommended.
Eye washes and showers for emergency use.

General Information:

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.

Personal protective equipment

Respiratory protection : Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

In areas where hydrogen sulphide vapours may accumulate, a positive-pressure air-supplied respirator is advised.

Hand protection
Remarks

: Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. PVC. Longer term protection: Nitrile rubber. Incidental contact/Splash protection: Neoprene rubber. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough

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time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced.

- Eye protection : Wear goggles for use against liquids and gas.
- Skin and body protection : Wear chemical resistant gloves/gauntlets, boots, and apron.
- Protective measures : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
- Hygiene measures : Hydrogen sulphide (H₂S) and other toxic sulphur oxides may be given off when this material is heated. Do not depend on sense of smell for warning. Use hydrogen sulphide monitors for detection. Hydrogen sulphide (H₂S or Sour Gas) may be present when loading and unloading transport vessels. Stay upwind and away from newly opened hatches and allow to vent thoroughly before handling material. Steam may be used to vent hatches. Keep all sources of ignition away from loading area. See National Fire Protection Association (NFPA) Code 655 for specific information on the crushing, grinding, pulverizing or handling of sulphur.

Environmental exposure controls

- General advice : Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour. Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation. Information on accidental release measures are to be found in section 6.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : liquid
- Colour : Not applicable
- Odour : Not applicable
- Odour Threshold : Data not available
- pH : Not applicable
- Melting point/freezing point : Data not available
- Initial boiling point and boiling range : 10 - 400 °C / 50 - 752 °F

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Flash point	: 100 - 200 °C / 212 - 392 °F Method: Unspecified
Evaporation rate	: Data not available
Flammability (solid, gas)	: Not applicable
Upper explosion limit	: 8 %(V)
Lower explosion limit	: 0.6 %(V)
Vapour pressure	: (38 °C / 100 °F) Method: Unspecified Not applicable (50 °C / 122 °F) Method: Unspecified Not applicable
Relative vapour density	: Data not available
Density	: 936.3 kg/m ³ (15.0 °C / 59.0 °F) Method: Unspecified
Solubility(ies)	
Water solubility	: insoluble
Solubility in other solvents	: Data not available
Partition coefficient: n-octanol/water	: log Pow: 2 - 6
Auto-ignition temperature	: > 220 °C / 428 °F
Decomposition temperature	: Data not available Data not available
Viscosity	
Viscosity, kinematic	: 3 - 1000 mm ² /s (40 °C / 104 °F) Method: Unspecified
Explosive properties	: Classification Code: Not classified
Oxidizing properties	: Not applicable
Conductivity	: Low conductivity: < 100 pS/m, The conductivity of this material makes it a static accumulator., A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10 000 pS/m., Whether a liquid is nonconductive or semiconductive,

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the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Oxidises on contact with air.
Chemical stability	: Stable under normal conditions of use.
Possibility of hazardous reactions	: No hazardous reaction is expected when handled and stored according to provisions
Conditions to avoid	: Avoid heat, sparks, open flames and other ignition sources. In certain circumstances product can ignite due to static electricity.
Incompatible materials	: Strong oxidising agents.
Hazardous decomposition products	: Hazardous decomposition products are not expected to form during normal storage. Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulphur oxides and unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation. Hydrogen sulphide.

SECTION 11. TOXICOLOGICAL INFORMATION

Basis for assessment	: Information given is based on data on the components and the toxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
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Information on likely routes of exposure

Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.

Acute toxicity

Product:

Acute oral toxicity	: LD 50 (Rat): > 5,000 mg/kg Remarks: Low toxicity:
Acute inhalation toxicity	: Remarks: Expected to be of low toxicity if inhaled.
Acute dermal toxicity	: LD 50 (Rabbit): > 2,000 mg/kg Remarks: Low toxicity:

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Skin corrosion/irritation

Product:

Remarks: Not irritating to skin., Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis.

Serious eye damage/eye irritation

Product:

Remarks: Causes serious eye irritation.

Remarks: Irritating to eyes. (Hydrogen Sulfide)

Respiratory or skin sensitisation

Product:

Test Type: Skin sensitisation

Remarks: Not expected to be a sensitiser.

Test Type: Respiratory sensitisation

Remarks: Not expected to be a sensitiser.

Germ cell mutagenicity

Product:

: Remarks: Not expected to be mutagenic.

Carcinogenicity

Product:

Remarks: Causes cancer in laboratory animals.

Remarks: Known human carcinogen., May cause leukaemia (AML - acute myelogenous leukaemia)., Contains Benzene, CAS # 71-43-2.

IARC	Group 1: Carcinogenic to humans	
	benzene	71-43-2
ACGIH	Confirmed human carcinogen	
	benzene	71-43-2
	Confirmed animal carcinogen with unknown relevance to humans	
	crude oil	8002-05-9
	Ethylbenzene	100-41-4
OSHA	OSHA specifically regulated carcinogen	
	benzene	71-43-2

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NTP

Reasonably anticipated to be a human carcinogen

benzene

71-43-2

crude oil

8002-05-9

Reproductive toxicity

Product:

:

Remarks: Not expected to impair fertility., Not expected to be a developmental toxicant.

STOT - single exposure

Product:

Remarks: High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.

Remarks: Inhalation of vapours or mists may cause irritation to the respiratory system., Contains hydrogen sulphide.

Remarks: Inhalation of vapours or mists cause irritation to the respiratory system. (Hydrogen Sulfide)

STOT - repeated exposure

Product:

Remarks: May cause damage to organs or organ systems through prolonged or repeated exposure., Blood, Liver, thymus, spleen

Further information

Product:

Remarks: Classifications by other authorities under varying regulatory frameworks may exist.

Remarks: H2S has a broad range of effects dependent on the airborne concentration and length of exposure: 0.02 ppm odour threshold, smell of rotten eggs; 10 ppm eye and respiratory tract irritation; 100 ppm coughing, headache, dizziness, nausea, eye irritation, loss of sense of smell in minutes; 200 ppm potential for pulmonary oedema after >20-30 minutes; 500 ppm loss of consciousness after short exposures, potential for respiratory arrest; >1000ppm immediate loss of consciousness, may lead rapidly to death, prompt cardiopulmonary resuscitation may be required. Do not depend on sense of smell for warning. H2S causes rapid olfactory fatigue (deadens sense of smell). There is no evidence that H2S will accumulate in the body tissue after repeated exposure.

Remarks: Contains Benzene, CAS # 71-43-2., May cause MDS (Myelodysplastic Syndrome).

SECTION 12. ECOLOGICAL INFORMATION

Basis for assessment : Ecotoxicological data have not been determined specifically

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for this product.

Information given is based on a knowledge of the components and the ecotoxicology of similar products.

Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Ecotoxicity

Product:

- Toxicity to fish (Acute toxicity) : Remarks: Expected to be harmful:
LL/EL/IL50 10-100 mg/l
- Toxicity to daphnia and other aquatic invertebrates (Acute toxicity) : Remarks: Expected to be toxic:
LL/EL/IL50 > 1 <= 10 mg/l
- Toxicity to algae (Acute toxicity) : Remarks: Expected to be harmful:
LL/EL/IL50 >10 <= 100 mg/l
- Toxicity to fish (Chronic toxicity) : Remarks: NOEC/NOEL expected to be > 0.1 - <= 1.0 mg/l
(based on modeled data)
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: NOEC/NOEL expected to be > 0.1 - <= 1.0 mg/l
(based on modeled data)
- Toxicity to bacteria (Acute toxicity) : Remarks: Expected to be practically non toxic:
LL/EL/IL50 > 100 mg/l

Persistence and degradability

Product:

- Biodegradability : Remarks: Major constituents are inherently biodegradable, but contains components that may persist in the environment.
The volatile constituents will oxidize rapidly by photochemical reactions in air.

Bioaccumulative potential

Product:

- Bioaccumulation : Remarks: Not expected to bioaccumulate significantly.

Mobility in soil

Product:

- Mobility : Remarks: If the product enters soil, one or more constituents will or may be mobile and may contaminate groundwater.
Contains volatile components.
Partly evaporates from water or soil surfaces, but a significant proportion will remain after one day.
Floats on water and forms a slick.

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Other adverse effects

no data available

Product:

Additional ecological information : Films formed on water may affect oxygen transfer and damage organisms.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Recover or recycle if possible.
It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Do not dispose into the environment, in drains or in water courses
Do not dispose of tank water bottoms by allowing them to drain into the ground.
Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

Contaminated packaging : Send to drum recoverer or metal reclaimer.
Drain container thoroughly.
After draining, vent in a safe place away from sparks and fire.
Residues may cause an explosion hazard if heated above the flash point. Do not puncture, cut or weld uncleaned drums.
Do not pollute the soil, water or environment with the waste container.
Comply with any local recovery or waste disposal regulations.

Local legislation
Remarks : Disposal should be in accordance with applicable regional, national, and local laws and regulations.
Local regulations may be more stringent than regional or national requirements and must be complied with.

SECTION 14. TRANSPORT INFORMATION

National Regulations

US Department of Transportation Classification (49 CFR Parts 171-180)

UN/ID/NA number : UN 3494
Proper shipping name : PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC
Class : 3
Subsidiary risk : 6.1
Packing group : I
Labels : 3 (6.1)

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ERG Code : 131
Marine pollutant : no
Remarks : This material is an 'OIL' under 49 CFR Part 130 when transported in a container of 3500 gallon capacity or greater.

International Regulations

IATA-DGR

UN/ID No. : UN 3494
Proper shipping name : PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC
Class : 3
Subsidiary risk : 6.1
Packing group : I
Labels : 3 (6.1)

IMDG-Code

UN number : UN 3494
Proper shipping name : PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC
Class : 3
Subsidiary risk : 6.1
Packing group : I
Labels : 3 (6.1)
Marine pollutant : yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollution category : Not applicable
Ship type : Not applicable
Product name : Not applicable
Special precautions : Not applicable

Special precautions for user

Remarks : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

Additional Information : MARPOL Annex 1 rules apply for bulk shipments by sea.

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : Carcinogen

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Benzene	71-43-2	10	500
Naphthalene	91-20-3	100	*
Toluene	108-88-3	1000	*
Toluene	108-88-3	100	*
Cyclohexane	110-82-7	1000	*
Hexane	110-54-3	5000	*
Ethylbenzene	100-41-4	1000	*
Ethylbenzene	100-41-4	100	*

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Hydrogen Sulfide	7783-06-4	100	*
Cumene	98-82-8	5000	*

*: Calculated RQ exceeds reasonably attainable upper limit.

CERCLA Reportable Quantity

Calculated RQ exceeds reasonably attainable upper limit.

CERCLA Reportable Quantity

The components with RQs are given for information., Shell classifies this material as an "oil" under the CERCLA Petroleum Exclusion, therefore releases to the environment are not reportable under CERCLA.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Chronic Health Hazard

SARA 302 : The following components are subject to reporting levels established by SARA Title III, Section 302:

Hydrogen sulfide	7783-06-4	0.1 %
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SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

n-Hexane	110-54-3	5 %
toluene	108-88-3	4 %
cyclohexane	110-82-7	3 %
benzene	71-43-2	2 %
cumene	98-82-8	1 %
Ethylbenzene	100-41-4	1 %
Naphthalene	91-20-3	0.5 %

Clean Water Act

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Ethylbenzene	100-41-4	1 %
Naphthalene	91-20-3	0.5 %
Hydrogen sulfide	7783-06-4	0.1 %
toluene	108-88-3	4 %
cyclohexane	110-82-7	3 %
benzene	71-43-2	2 %

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Pennsylvania Right To Know

crude oil	8002-05-9
n-Hexane	110-54-3
toluene	108-88-3
cyclohexane	110-82-7
benzene	71-43-2
cumene	98-82-8
Ethylbenzene	100-41-4
Naphthalene	91-20-3
Hydrogen sulfide	7783-06-4

New Jersey Right To Know

crude oil	8002-05-9
n-Hexane	110-54-3
toluene	108-88-3
cyclohexane	110-82-7
benzene	71-43-2
cumene	98-82-8
Ethylbenzene	100-41-4
Naphthalene	91-20-3

California Prop 65

WARNING! This product contains a chemical known to the State of California to cause cancer.

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

The components of this product are reported in the following inventories:

TSCA : All components listed.

SECTION 16. OTHER INFORMATION

Further information

This product is intended for use in closed systems only.

Abbreviations and Acronyms : The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.

ACGIH = American Conference of Governmental Industrial Hygienists

ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road

AICS = Australian Inventory of Chemical Substances

ASTM = American Society for Testing and Materials

BEL = Biological exposure limits

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes

CAS = Chemical Abstracts Service

CEFIC = European Chemical Industry Council

CLP = Classification Packaging and Labelling

COC = Cleveland Open-Cup

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DIN = Deutsches Institut für Normung
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
DSL = Canada Domestic Substance List
EC = European Commission
EC50 = Effective Concentration fifty
ECETOC = European Center on Ecotoxicology and Toxicology Of Chemicals
ECHA = European Chemicals Agency
EINECS = The European Inventory of Existing Commercial Chemical Substances
EL50 = Effective Loading fifty
ENCS = Japanese Existing and New Chemical Substances Inventory
EWC = European Waste Code
GHS = Globally Harmonised System of Classification and Labelling of Chemicals
IARC = International Agency for Research on Cancer
IATA = International Air Transport Association
IC50 = Inhibitory Concentration fifty
IL50 = Inhibitory Level fifty
IMDG = International Maritime Dangerous Goods
INV = Chinese Chemicals Inventory
IP346 = Institute of Petroleum test method N° 346 for the determination of polycyclic aromatics DMSO-extractables
KECI = Korea Existing Chemicals Inventory
LC50 = Lethal Concentration fifty
LD50 = Lethal Dose fifty per cent.
LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading
LL50 = Lethal Loading fifty
MARPOL = International Convention for the Prevention of Pollution From Ships
NOEC/NOEL = No Observed Effect Concentration / No Observed Effect Level
OE_HP V = Occupational Exposure - High Production Volume
PBT = Persistent, Bioaccumulative and Toxic
PICCS = Philippine Inventory of Chemicals and Chemical Substances
PNEC = Predicted No Effect Concentration
REACH = Registration Evaluation And Authorisation Of Chemicals
RID = Regulations Relating to International Carriage of Dangerous Goods by Rail
SKIN_DES = Skin Designation
STEL = Short term exposure limit
TRA = Targeted Risk Assessment
TSCA = US Toxic Substances Control Act
TWA = Time-Weighted Average
vPvB = very Persistent and very Bioaccumulative

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This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.