## SECTION 1: CHEMICAL PRODUCT and COMPANY IDENTIFICATION (N/A)

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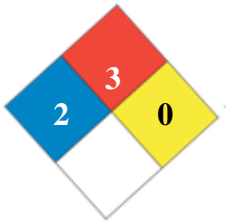
|---|---|
| Product Name: | **Petroleum Crude Oil (Sour)** |
| Synonyms: | Various names related to the particular production field may be applied to specific crude oil streams, such as Petroleum Crude Oil, Sour Crude, etc. |
| Chemical Family: | Petroleum Hydrocarbon |
| Chemical Formula: | Mixture |
| Manufacturer Name: | Terasen Pipelines (USA), Inc. |
| Address: | 800 Werner Court, Suite ##352<br>Casper, WY 82601 |
| General Use: | Refinery feedstock |
| **CHEMTREC Numbers:** | |
| **For emergencies in the US, call CHEMTREC: 800-424-9300** | |
| Revision Date: | June 5, 2003 |
| Trade Names: | Various names related to the particular production field may be applied to specific crude oil streams, such as Petroleum Crude Oil, Sour Crude, etc. |
| NFPA Classification: | Health (Blue): 2<br>Fire (Red): 3<br>Reactivity (Yellow): 0<br>Special (White): None<br><br>HMIS Classification:<br>Health (Blue): 1<br>Fire (Red): 3<br>Reactivity (Yellow): 0<br><br>Hazard Rating:<br>0 = Minimal<br>1 = Slight<br>2 = Moderate<br>3 = Serious<br>4 = Severe |

**NFPA**




**HMIS**

| | |
|---|---|
| HEALTH | 1 |
| FIRE | 3 |
| REACTIVITY | 0 |
| PPE | |

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## SECTION 2 : COMPOSITION, INFORMATION ON INGREDIENTS : (N/A)

| Ingredient Name | | CAS# | Ingredient Percent |
|---|---|---|---|
| Petroleum Crude Oil | | 8002-05-9 | 98.0 - 100.0% by Weight |
| EC Index Number: | 1 | | |
| Sulfur Compounds | | Mixture | > 0.5% by Weight |
| EC Index Number: | 1 | | |
| Benzene | | 71-43-2 | 0.1 - 0.8% by Weight |
| OSHA PEL TWA: | 1.0 ppm | | |
| OSHA STEL/Ceiling: | 5.0 ppm | | |
| ACGIH TLV TWA: | 0.50 ppm | | |
| ACGIH STEL/Ceiling: | 2.5 ppm | | |
| EC Index Number: | 1 | | |
| Hydrogen Sulfide | | 7783-43-2 | 0.0 - 0.5% by Weight |
| OSHA PEL TWA: | 10.0 ppm | | |
| OSHA STEL/Ceiling: | 15.0 ppm | | |
| ACGIH TLV TWA: | 10.0 ppm | | |
| ACGIH STEL/Ceiling: | 15.0 ppm | | |
| EC Index Number: | 1 | | |
| Total Hydrocarbons | | | |
| OSHA PEL TWA: | 100 ppm* | | |
| OSHA STEL/Ceiling: | Not Applicable | | |
| ACGIH TLV TWA: | Not Applicable | | |

| | |
|---|---|
| ACGIH STEL/Ceiling: | Not Applicable |
| EC Index Number: | 1 |
| Comments: | * Recommended Industry Standard |

Crude oil is a naturally occurring mixture of paraffins, aromatic hydrocarbons and small amounts of sulphur and nitrogen compounds. The composition and properties will vary significantly according to the source of the crude. This mixture may contain benzene and hydrogen sulfide (H2S). Crude oil is considered "sour" if its sulfur content is greater than 0.5% by weight.

This mixture has been tested as a whole to determine its hazards under the OSHA Hazard Communication Standard in 29 CFR 1910.1200.

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## SECTION 3 : HAZARDS IDENTIFICATION : (N/A)

**Applies to all ingredients:**

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| Route of Exposure: | Inhalation, Absorption, and Ingestion |
| Potential Health Effects: | |
| Eye Contact: | Crude oil vapors are moderately irritating to the eyes. Hot splashes will cause acute effects, such as eye burns and permanent eye damage. |
| Skin Absorption: | Prolonged skin contact may cause defatting of the skin resulting in dry cracked skin and dermatitis. Benzene may be absorbed through skin. |
| Inhalation: | Central nervous system depression from crude oil vapor may include symptoms such as headache, drowsiness, dizziness or nausea. If concentrations are very high, edema (fluid in the lungs) may result. Symptoms include shortness of breath and difficulty breathing. Symptoms may be delayed for several hours. Neurobehavioural effects, such as impaired short-term memory and unsteady balance, may also be caused by inhalation of crude oil vapor.<br><br>Crude oil vapor at high concentrations can displace oxygen in enclosed spaces and cause asphyxiation in exposed persons. Oxygen concentrations must not be allowed to fall below 19.5% (at normal pressure). |
| Ingestion: | Minimal toxicity may occur from ingestion. Aspiration (inadvertent suction) of liquid into the lung can produce chemical pneumonitis, pulmonary edema/hemorrhage and even death. |
| Chronic Health Effects: | Delayed Effects: Liver, kidney, blood, visual and auditory effects are possible. Dermatitis may occur. Possible neurological effects: difficulty in sleeping, concentrating, and remembering things. Prolonged exposure to hydrogen sulfide can result in "gas eyes" (sore eyes), with scratchiness, irritation, tearing and burning. Prolonged exposure to benzene can cause damage to the bone marrow and blood cells, which may result in leukemia or anemia. |
| Aggravation of Pre-Existing Conditions: | Pre-existing skin, eye and respiratory disorders may be aggravated by exposure to components of crude oil. |

**Hydrogen Sulfide :**

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| Potential Health Effects: | H2S can have the following effects:<br>< 10 ppm: Inflammation and irritation of the eyes, nose, and throat.<br><br>50 ppm: Marked irritation and dryness of the nose and throat; prolonged exposure may result in runny nose, cough, hoarseness, shortness of breath, and pneumonia; sore eyes.<br><br>100 - 500 ppm: Temporary loss of smell.<br><br>200 - 250 ppm: Severe irritation, as well as headache, nausea, vomiting, dizziness; prolonged exposure may result in lung damage (edema); exposure for 4 to 8 hours can result in death.<br><br>300 - 500 ppm: Same effects as for 200-250 ppm, occurring more rapidly; death can result after 1 to 4 hours of exposure.<br><br>500 ppm: Excitement, headache, dizziness, staggering, unconsciousness, and respiratory failure in 5 minutes to 1 hour; death in 30 minutes to 1 hour.<br><br>> 500 ppm: Rapid unconsciousness and death. |

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## SECTION 4 : FIRST AID MEASURES : (N/A)

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| Eye Contact: | Flush contaminated eye with large amounts of lukewarm, gently flowing water. Take care to avoid contamination of unaffected eye. If symptoms persist, or if irritation occurs, contact a physician. |

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| Skin Contact: | Wash affected areas with warm soapy water. Remove contaminated clothing as soon as possible. If irritation is severe or prolonged, seek medical advice. |
| Inhalation: | Remove victim to fresh air using proper precautions. If breathing has stopped, administer artificial respiration. If the heart has stopped beating, administer cardiopulmonary resuscitation (CPR) immediately. For victims of hydrogen sulfide (H2S) exposure, administration of oxygen may be beneficial. Obtain medical attention promptly. |
| Ingestion: | DO NOT induce vomiting since it is important that no amount of the material should be aspirated into the lungs. If vomiting occurs, lower victim's head to prevent vomitus from entering the lungs. DO NOT give liquids. Keep victim at rest. Get medical help immediately. |

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## SECTION 5 : FIRE FIGHTING MEASURES : (N/A)

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| Flash Point: | < 50 deg F |
| Flash Point Method: | PMCC |
| Upper Flammable or Explosive Limit: | (%volume): No Data Available |
| Lower Flammable or Explosive Limit: | (%volume): No Data Available |
| Auto Ignition Temperature: | No Data Available |
| Extinguishing Media: | Means of Extinction: Use Class B fire extinguishers, such as foam or dry chemical. Use water spray to cool fire-exposed containers or to disperse vapors from a spill or leak that has not been ignited. Fire fighting should only be attempted by those who are adequately trained and equipped with proper protective equipment. |
| Unusual Fire Hazards: | This material has been determined to be a flammable liquid. Vapors may travel considerable distances along the ground or be moved by ventilation and ignited by many sources such as pilot lights, sparks, electric motors, static discharge or other ignition sources. Flashback may occur along the vapor trail. All storage containers and other equipment must be grounded. |
| Hazardous Decomposition Byproducts: | Carbon monoxide, carbon dioxide, sulfur oxides, hydrogen sulfide or other hydrocarbons. |

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## SECTION 6 : ACCIDENTAL RELEASE MEASURES : (N/A)

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|---|---|
| Spill Cleanup Measures: | Isolate the area and restrict access until cleanup is completed. Ensure that cleanup is conducted only by trained personnel using adequate personal protective equipment. Eliminate all sources of ignition. Ventilate area. Stop or reduce flow of product if this can be done without risk. Prevent liquid from entering drains and sewers. |

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## SECTION 7 : HANDLING and STORAGE : (N/A)

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| Handling: | Comply with all applicable OSHA, NFPA and local requirements. Use appropriate bonding and ground practices. Eliminate all sources of ignition. Use explosion-proof equipment, intrinsically safe electrical systems, and non-sparking tools. Do not pressurize, cut, heat or weld empty containers. Exercise care in tank gauging or similar operations as overheating could cause high concentrations of H2S to accumulate in the headspace of containers. |
| Storage: | Store in properly closed containers that are appropriately labeled in a cool, well-ventilated area. |

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## SECTION 8 : EXPOSURE CONTROLS, PERSONAL PROTECTION : (N/A)

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| Engineering Controls: | Local or general exhaust ventilation is required in enclosed areas or in areas with inadequate ventilation.<br><br>Exposure Control: General or local exhaust ventilation will prevent accumulations of vapors. Provide mechanical ventilation of confined spaces. Use explosion proof ventilation and monitoring equipment. |
| Skin Protection Description: | Use chemical resistant gloves such as Nitrile or Neoprene, if direct contact with liquid is likely to occur. |
| Eye/Face Protection: | Use safety glasses for all conditions. Where splashing is possible, wear goggles. |
| Respiratory Protection: | Respiratory protection is not normally required for routine operations. Supplied air respirators are required for atmospheres that contain concentrations exceeding 10 ppm of hydrogen sulfide. Respirators with organic vapor cartridges should be used with benzene concentrations exceed 1 ppm. |

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## SECTION 9 : PHYSICAL and CHEMICAL PROPERTIES : (N/A)

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|---|---|
| Physical State/Appearance: | Liquid |
| Color: | Amber to black |
| Odor: | Mild hydrocarbon or rotten eggs |
| Physical State: | Liquid |
| Vapor Pressure: | Reid: 4 - 9 psi @ 100 deg F |
| Vapor Density: | Variable |
| Boiling Point: | 80 - 170 deg F |
| Specific Gravity: | < 1 (Water = 1) |
| Density: | API Gravity @ 60 deg F: 26 - 29<br>@ 15 deg C: 881 - 898 |
| Percent Volatile: | 2% - 5% over 24 hours at 70 deg F |
| Odor Threshold: | 0.13 ppm for H2S |
| | *Do not rely on odor to detect hydrogen sulfide. It paralyses the sense of smell at about 100 ppm. |

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## SECTION 10 : STABILITY and REACTIVITY : (N/A)

| | |
|---|---|
| Chemical Stability: | This material is stable. |
| Incompatibilities with Other Materials: | Oxidizing materials. |
| Reactivity: | Reactivity Conditions: Heat or ignition sources may ignite product. |
| Hazardous Polymerization: | Hazardous polymerization will not occur. |

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## SECTION 11 : TOXICOLOGICAL INFORMATION : (N/A)

**Applies to all ingredients:**

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|---|---|
| Carcinogenicity: | Some crude oils have been found to be carcinogenic in animal tests, but the major cancer research assessment agencies - IARC and ACGIH - have not classified crude oil as a carcinogen. |
| Sensitization: | Components are not known to cause sensitization. |
| Irritation: | May cause skin, eye, and respiratory tract irritation. |
| Other Toxicological Information: | Synergistic Materials:<br>The presence of one or more of benzene, toluene, xylene, or alcohol slows the clearance of the others from the body. |

**Benzene :**

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| Carcinogenicity: | Benzene is listed in the National Toxicology Program (NTP) 10th Report on Carcinogens as "known to be a human carcinogen". The International Agency for Research on Cancer (IARC) Monographs lists benzene under Group 1: the agent is carcinogenic to humans. |
| Mutagenicity: | Benzene is known to cause genetic damage. |
| Teratogenicity: | Benzene has been shown to cause fetotoxic effects in animal studies. |

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## SECTION 12 : ECOLOGICAL INFORMATION : (N/A)

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| Ecological Paragraph: | Coating action of oil can destroy birds, plankton, algae and fish. Keep out of all bodies of water and sewage drainage systems. |

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## SECTION 13 : DISPOSAL CONSIDERATIONS : (N/A)

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| Waste Disposal: | Samples should be taken to ensure appropriate characterization. Dispose according to applicable federal, provincial or state and local regulations. This material may meet the criteria of an "ignitable" hazardous waste or could contain |

benzene at levels that could exhibit the characteristics of "toxicity" as determined by the toxicity characteristic leaching procedure (TCLP). It is the responsibility of the user to determine if the disposal material is hazardous.

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## SECTION 14 : TRANSPORT INFORMATION : (N/A)

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|---|---|
| DOT Shipping Name: | Petroleum Crude Oil |
| DOT UN Number: | PIN: UN 1267 |
| DOT Hazard Class: | 3 |
| DOT Packing Group: | II |

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## SECTION 15 : REGULATORY INFORMATION : (N/A)

**Applies to all ingredients:**

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|---|---|
| TSCA 8(b): Inventory Status: | EPA Toxic Substances Control Act (40 CFR 710) |
| SARA: | EPA SARA III (Superfund Amendments and Reauthorization Act) |
| OSHA 29 CFR 1200: | This mixture has been tested as a whole to determine its hazards under the OSHA Hazard Communication Standard in 29 CFR 1910.1200.<br><br>OSHA Hazard Communication Standard (29 CFR 1910.1200)<br>The above regulations apply to this product |

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## SECTION 16 : ADDITIONAL INFORMATION : (N/A)

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| HMIS: | |
| Health Hazard: | 1 = Slight (Blue) |
| Fire Hazard: | 3 = Serious (Red) |
| Reactivity: | 0 = Minimal (Yellow) |
| NFPA: | |
| Health: | 2 = Moderate (Blue) |
| Fire Hazard: | 3 = Serious (Red) |
| Reactivity: | 0 = Minimal (Yellow) |
| Specific Hazard: | None (White) |
| MSDS Revision Date: | June 5, 2003 |
| MSDS Author: | Prepared by:<br>Terasen Pipelines (USA) Inc.<br>Health, Environment & Safety Department<br>Phone Number: (307) 233-6160 |

Disclaimer:

Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond the control of the supplier. Certain parts of the information have been obtained from sources outside of the supplier and while the supplier believes such information to be correct, it cannot guarantee its accuracy or completeness. The supplier makes no warranties, guarantees or conditions expressed or implied in respect to the information contained herein.

Hazard Rating:
0 = Minimal
1 = Slight
2 = Moderate
3 = Serious
4 = Severe

Acronyms:
ACGIH: American Conference of Governmental Industrial Hygienists
DOT: Department of Transportation
H2S: Hydrogen Sulfide
IARC: International Agency for Research on Cancer
LEL: Lower Explosive Limit
N/A: Not Applicable
NFPA: National Fire Protection Association
NIOSH: National Institute for Occupational Safety & Health
OSHA: Occupational Safety and Health Administration
PIN: Product Identification Number
PMCC: Pensky-Martin Closed Cup Test
STEL: Short Term Exposure Limit
UEL: Upper Explosive Limit
UN: United Nations

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