1. Identification

Product identifier: Bunker Fuel

Other means of identification:

SDS number: 200-GHS


See section 16 for complete information.

Recommended use: Refinery feedstock.

Recommended restrictions: None known.

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 4

Health hazards:
- Acute toxicity, inhalation - Category 4
- Germ cell mutagenicity - Category 1B
- Carcinogenicity - Category 1B
- Reproductive toxicity - Category 2
- Specific target organ toxicity, repeated exposure - Category 2
- Aspiration hazard - Category 1

Environmental hazards: Hazardous to the aquatic environment, long-term hazard - Category 1

OSHA defined hazards: Not classified.

Label elements

Signal word: Danger

Hazard statement: Combustible liquid. Harmful if inhaled. May cause genetic defects. Suspected of causing cancer. Suspected of damaging fertility or the unborn child. May cause damage to organs (blood, liver, kidney) through prolonged or repeated exposure. May be fatal if swallowed and enters airways.

Precautionary statement

Prevention: Keep away from flames and hot surfaces. - No smoking. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist/vapors/spray. Wear protective gloves/protective clothing/eye protection/face protection. Use only outdoors or in a well-ventilated area.

Response: If exposed or concerned: Get medical advice/attention. If swallowed: Immediately call a poison center/doctor. Do not induce vomiting. If inhaled: Remove person to fresh air and keep comfortable for breathing.

Storage: 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)  None known.

3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarified oils (Petroleum), catalytic cracked</td>
<td>64741-62-4</td>
<td>0-100</td>
</tr>
<tr>
<td>Clarified oils (petroleum), hydrodesulfurized catalytic cracked</td>
<td>68333-26-6</td>
<td>0-100</td>
</tr>
<tr>
<td>Distillates (petroleum), heavy catalytic cracked</td>
<td>64741-61-3</td>
<td>0-100</td>
</tr>
<tr>
<td>Distillates, petroleum residues vacuum</td>
<td>68955-27-1</td>
<td>0-100</td>
</tr>
<tr>
<td>Fuel Oil No. 6</td>
<td>68553-00-4</td>
<td>0-100</td>
</tr>
<tr>
<td>Fuel oil, residual</td>
<td>68476-33-5</td>
<td>0-100</td>
</tr>
<tr>
<td>Residues (petroleum), light vacuum</td>
<td>68512-62-9</td>
<td>0-100</td>
</tr>
<tr>
<td>Polycyclic Aromatic Hydrocarbons</td>
<td>130498-29-2</td>
<td>0-10</td>
</tr>
<tr>
<td>Asphaltenes (petroleum)</td>
<td>91995-23-2</td>
<td>0-5</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>91-20-3</td>
<td>0-3</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Hydrogen sulfide</td>
<td>7783-06-4</td>
<td>0-1</td>
</tr>
<tr>
<td>Sulfur</td>
<td>7704-34-9</td>
<td>0-1</td>
</tr>
</tbody>
</table>

Composition comments: Small amount of hydrogen sulfide, a highly toxic gas, may be present, especially in the headspace of containers.

4. First-aid measures

Inhalation
Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention if discomfort develops or persists.

Skin contact
Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes.

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.

Ingestion
Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Never give anything by mouth to a victim who is unconscious or is having convulsions. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

Indication of immediate medical attention and special treatment needed
In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information
If exposed or concerned: get medical attention/advice. 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 re-use.

5. Fire-fighting measures

Suitable extinguishing media
Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Precautions for safe handling

- Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity.
- Wear personal protective equipment. Do not breathe gas/fumes/vapor/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight.
- Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. When using, do not eat, drink or smoke. Avoid release to the environment.

Specific methods

Use water spray to cool unopened containers.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- Keep unnecessary personnel away. Local authorities should be advised if significant spills cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the SDS for Personal Protective Equipment.

Methods and materials for containment and cleaning up

- Small Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Cover with plastic sheet to prevent spreading. Collect spillage. Following product recovery, flush area with water. Prevent product from entering drains. Do not allow material to contaminate ground water system. Clean surface thoroughly to remove residual contamination. Wipe up with absorbent material (e.g. cloth, fleece).
- Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. This material and its container must be disposed of as hazardous waste.
- Clean up in accordance with all applicable regulations.

Environmental precautions

If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew.

Flammable. Review Firefighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames, smoking, sparks or flames in immediate area) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g. by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Use compatible foam to minimize vapor generation as needed. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 1-800-424-8802. For highway or railways spills, contact Chemtrec at 1-800-424-9300.

7. Handling and storage

Precautions for safe handling

- Do not use a solid water stream as it may scatter and spread fire.
- Vapors can flow along surfaces to distant ignition source and flash back. Sensitive to static discharge. Vapor may cause flash fire.
- Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.
- Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Vapors may form explosive air mixtures even at room temperature. Prevent buildup of vapors or gases to explosive concentrations. Some of these materials, if spilled, may evaporate leaving a flammable residue. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.
Conditions for safe storage, including any incompatibilities

Combustible liquid storage. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed in a cool, well-ventilated place. Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children.

8. Exposure controls/personal protection

Occupational exposure limits

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

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene (CAS 71-43-2)</td>
<td>STEL</td>
<td>5 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1 ppm</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarified oils (Petroleum), catalytic cracked (CAS 64741-62-4)</td>
<td>PEL</td>
<td>5 mg/m3 Mist.</td>
</tr>
<tr>
<td>Fuel Oil No. 6 (CAS 68553-00-4)</td>
<td>PEL</td>
<td>5 mg/m3 Mist.</td>
</tr>
<tr>
<td>Fuel oil, residual (CAS 68476-33-5)</td>
<td>PEL</td>
<td>5 mg/m3 Mist.</td>
</tr>
<tr>
<td>Naphthalene (CAS 91-20-3)</td>
<td>PEL</td>
<td>50 mg/m3 10 ppm</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene (CAS 71-43-2)</td>
<td>Ceiling</td>
<td>25 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>10 ppm</td>
</tr>
<tr>
<td>Hydrogen sulfide (CAS 7783-06-4)</td>
<td>Ceiling</td>
<td>20 ppm</td>
</tr>
</tbody>
</table>

US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene (CAS 71-43-2)</td>
<td>STEL</td>
<td>2.5 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>0.5 ppm</td>
</tr>
<tr>
<td>Clarified oils (Petroleum), catalytic cracked (CAS 64741-62-4)</td>
<td>TWA</td>
<td>5 mg/m3 Inhalable fraction.</td>
</tr>
<tr>
<td>Distillates (petroleum), heavy catalytic cracked (CAS 64741-61-3)</td>
<td>TWA</td>
<td>5 mg/m3 Inhalable fraction.</td>
</tr>
<tr>
<td>Fuel Oil No. 6 (CAS 68553-00-4)</td>
<td>TWA</td>
<td>5 mg/m3 Inhalable fraction.</td>
</tr>
<tr>
<td>Fuel oil, residual (CAS 68476-33-5)</td>
<td>TWA</td>
<td>5 mg/m3 Inhalable fraction.</td>
</tr>
<tr>
<td>Hydrogen sulfide (CAS 7783-06-4)</td>
<td>STEL</td>
<td>5 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1 ppm</td>
</tr>
<tr>
<td>Naphthalene (CAS 91-20-3)</td>
<td>STEL</td>
<td>15 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>10 ppm</td>
</tr>
</tbody>
</table>

US. NIOSH: Pocket Guide to Chemical Hazards

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene (CAS 71-43-2)</td>
<td>STEL</td>
<td>1 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>0.1 ppm</td>
</tr>
<tr>
<td>Clarified oils (Petroleum), catalytic cracked (CAS 64741-62-4)</td>
<td>STEL</td>
<td>10 mg/m3 Mist.</td>
</tr>
<tr>
<td>Fuel Oil No. 6 (CAS 68553-00-4)</td>
<td>TWA</td>
<td>5 mg/m3 Mist.</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>10 mg/m3 Mist.</td>
</tr>
</tbody>
</table>
US. NIOSH: Pocket Guide to Chemical Hazards

### TWA & STEL Values

<table>
<thead>
<tr>
<th>Component</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel oil, residual (CAS 68476-33-5)</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>Mist.</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>10 mg/m³</td>
<td>Mist.</td>
</tr>
<tr>
<td>Hydrogen sulfide (CAS 7783-06-4)</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>Mist.</td>
</tr>
<tr>
<td></td>
<td>Ceiling</td>
<td>15 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Naphthalene (CAS 91-20-3)</td>
<td>STEL</td>
<td>75 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>50 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 ppm</td>
<td></td>
</tr>
</tbody>
</table>

### Biological limit values

**ACGIH Biological Exposure Indices**

<table>
<thead>
<tr>
<th>Components</th>
<th>Value</th>
<th>Determinant</th>
<th>Specimen</th>
<th>Sampling Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene (CAS 71-43-2)</td>
<td>25 µg/g</td>
<td>S-Phenylmercapturic acid</td>
<td>Creatinine in urine</td>
<td>*</td>
</tr>
</tbody>
</table>

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

### Exposure guidelines

**US - California OELs: Skin designation**
- Benzene (CAS 71-43-2) Can be absorbed through the skin.

**US ACGIH Threshold Limit Values: Skin designation**
- Benzene (CAS 71-43-2) Can be absorbed through the skin.
- Naphthalene (CAS 91-20-3) Can be absorbed through the skin.

### Appropriate engineering controls
- Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment.

### Individual protection measures, such as personal protective equipment

**Eye/face protection**
- Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.

**Skin protection**

**Hand protection**
- Wear chemical-resistant, impervious gloves. Suitable gloves can be recommended by the glove supplier. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.

**Other**
- Full body suit and boots are recommended when handling large volumes or in emergency situations. Flame retardant protective clothing is recommended.

**Respiratory protection**
- Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.

**Thermal hazards**
- Wear appropriate thermal protective clothing, when necessary.

**General hygiene considerations**
- Consult supervisor for special handling instructions. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.

### 9. Physical and chemical properties

**Appearance**
- Thick, black, oily liquid.

**Physical state**
- Liquid.

**Form**
- Oily liquid.

**Color**
- Black.

**Odor**
- Petroleum.

**Odor threshold**
- Not available.

**pH**
- Not applicable.
Melting point/freezing point  
Not available.

Initial boiling point and boiling range  
350.04 - 1200 °F (176.69 - 648.89 °C)

Flash point  
> 141.8 °F (> 61.0 °C) Pensky-Martens Closed Cup

Evaporation rate  
Not available.

Flammability (solid, gas)  
Not available.

Upper/lower flammability or explosive limits  
Flammability limit - lower (%)  
0.9

Flammability limit - upper (%)  
7

Explosive limit - lower (%)  
Not available.

Explosive limit - upper (%)  
Not available.

Vapor pressure  
< 0.7 kPa (20°C)

Vapor density  
> 5 (Air = 1)

Relative density  
0.88 - 1.02 (water=1)

Solubility(ies)  
Solubility (water)  
Not available.

Partition coefficient (n-octanol/water)  
Not available.

Auto-ignition temperature  
> 315.59 °F (> 157.55 °C)

Decomposition temperature  
Not available.

Viscosity  
Not available.

10. Stability and reactivity  
Reactivity  
Not available.

Chemical stability  
Stable under normal temperature conditions and recommended use.

Possibility of hazardous reactions  
Hazardous polymerization does not occur.

Conditions to avoid  
Heat, flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.

Incompatible materials  

Hazardous decomposition products  
No hazardous decomposition products are known.

11. Toxicological information  
Information on likely routes of exposure  
Ingestion  
May be fatal if swallowed and enters airways.

Inhalation  
Harmful if inhaled.

Skin contact  
Prolonged or repeated skin contact may cause drying, cracking, or irritation.

Eye contact  
May cause eye irritation.

Symptoms related to the physical, chemical and toxicological characteristics  

Information on toxicological effects  
Acute toxicity  
Harmful if inhaled. Harmful: may cause lung damage if swallowed.

Components  
Species  
Test Results

Benzene (CAS 71-43-2)  
Acute  
Oral  
LD50  
Rat  
930 mg/kg
<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hydrogen sulfide (CAS 7783-06-4)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Inhalation</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>&gt; 0.38 mg/l, 960 Minutes</td>
</tr>
<tr>
<td><strong>Naphthalene (CAS 91-20-3)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Dermal</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rabbit</td>
<td>&gt; 2 g/kg</td>
</tr>
<tr>
<td>Oral</td>
<td>Rat</td>
<td>490 mg/kg</td>
</tr>
</tbody>
</table>

**Skin corrosion/irritation**
Prolonged or repeated skin contact may cause drying, cracking, or irritation.

**Serious eye damage/eye irritation**
Based on available data, the classification criteria are not met.

**Respiratory or skin sensitization**

- **Respiratory sensitization**
  Based on available data, the classification criteria are not met.

- **Skin sensitization**
  Based on available data, the classification criteria are not met.

**Germ cell mutagenicity**
May cause heritable genetic damage. In in-vitro experiments benzene did not change the number of sister-chromatid exchanges (SCEs) or the number of chromosomal aberrations in human lymphocytes.

**Carcinogenicity**
Suspected of causing cancer.

Diesel exhaust has been reported to be an occupational hazard due to NIOSH-reported potential carcinogenic properties.

**IARC Monographs. Overall Evaluation of Carcinogenicity**

- Benzene (CAS 71-43-2) 1 Carcinogenic to humans.
- Clarified oils (Petroleum), catalytic cracked (CAS 64741-62-4) 2B Possibly carcinogenic to humans.
- Distillates (petroleum), heavy catalytic cracked (CAS 64741-61-3) 2B Possibly carcinogenic to humans.
- Fuel Oil No. 6 (CAS 68553-00-4) 2B Possibly carcinogenic to humans.
- Fuel oil, residual (CAS 68476-33-5) 2B Possibly carcinogenic to humans.
- Naphthalene (CAS 91-20-3) 2B Possibly carcinogenic to humans.

**NTP Report on Carcinogens**

- Benzene (CAS 71-43-2) Known To Be Human Carcinogen.
- Naphthalene (CAS 91-20-3) Reasonably Anticipated to be a Human Carcinogen.


- Benzene (CAS 71-43-2) Cancer

**Reproductive toxicity**
Suspected of damaging fertility or the unborn child. Can cause adverse reproductive effects - such as birth defects, miscarriages, or infertility. Avoid contact during pregnancy/while nursing.

Naphthalene interferes with embryo development in experimental animals at dose levels that cause maternal toxicity. In humans, excessive exposure to this agent may cause hemolytic anemia in the mother and fetus.

Animal studies of benzene have shown testicular effects, alterations in reproductive cycles, chromosomal aberrations and embryo/fetotoxicity.

**Specific target organ toxicity - single exposure**
Based on available data, the classification criteria are not met.

**Specific target organ toxicity - repeated exposure**
May cause damage to the following organs through prolonged or repeated exposure: Blood. Liver. Kidneys.

**Aspiration hazard**
May be fatal if swallowed and enters airways.

**Chronic effects**
Contains polycyclic aromatic compounds which have been shown to cause anemia, disorders of the liver, bone marrow and lymphoid tissues in rats following dermal application. Repeated exposure to naphthalene may cause cataracts, allergic skin rashes, destruction of red blood cells, and anemia, jaundice, kidney and liver damage. Danger of serious damage to health by prolonged exposure. Prolonged or repeated overexposure may cause central nervous system, kidney, liver, and lung damage.

**Further information**
Symptoms may be delayed.
12. Ecological information

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene (CAS 71-43-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Water flea (Daphnia magna)</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Rainbow trout, donaldson trout (Oncorhynchus mykiss)</td>
</tr>
<tr>
<td>Hydrogen sulfide (CAS 7783-06-4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Lake whitefish (Coregonus clupeaformis)</td>
</tr>
<tr>
<td>Naphthalene (CAS 91-20-3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Water flea (Daphnia magna)</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Pink salmon (Oncorhynchus gorbuscha)</td>
</tr>
<tr>
<td>Residues (petroleum), light vacuum (CAS 68512-62-9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Fish</td>
</tr>
</tbody>
</table>

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Partition coefficient n-octanol / water (log Kow)

Benzene (CAS 71-43-2) 2.13

Mobility in soil

Not available.

Other adverse effects

Not available.

13. Disposal considerations

Disposal instructions

Dispose in accordance with all applicable regulations. This material and its container must be disposed of as hazardous waste. 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 allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.

Hazardous waste code

D018: Waste Benzene

US RCRA Hazardous Waste U List: Reference

Benzene (CAS 71-43-2) U019
Hydrogen sulfide (CAS 7783-06-4) U135
Naphthalene (CAS 91-20-3) U165

Waste from residues / unused products

Dispose of in accordance with local regulations.

Contaminated packaging

Offer rinsed packaging material to local recycling facilities.

14. Transport information

DOT

UN number UN1268
UN proper shipping name Petroleum distillates, n.o.s.
Transport hazard class(es)

Class 3
Subsidiary risk -
Packing group III
Environmental hazards

Marine pollutant Yes

Special precautions for user

Read safety instructions, SDS and emergency procedures before handling.

Special provisions 144, B1, IB3, T4, TP1, TP29
Packaging exceptions 150
Packaging non bulk 203
Packaging bulk 242
IATA

UN number UN1268
UN proper shipping name Petroleum distillates, n.o.s.
Transport hazard class(es)

Class 3
Subsidiary risk -
Label(s) 3
Packing group III
Environmental hazards Yes
ERG Code 3L

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number UN1268
UN proper shipping name PETROLEUM DISTILLATES, N.O.S.
Transport hazard class(es)

Class 3
Subsidiary risk -
Label(s) 3
Packing group III
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 Not applicable. However, this product is a liquid and if transported in bulk covered under Annex II of MARPOL 73/78 and the IBC Code MARPOL 73/78, Annex I.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

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

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

CERCLA Hazardous Substance List (40 CFR 302.4)

Benzene (CAS 71-43-2) LISTED
Hydrogen sulfide (CAS 7783-06-4) LISTED
Naphthalene (CAS 91-20-3) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

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

SARA 302 Extremely hazardous substance

Chemical name Hydrogen sulfide SARA 311/312 Hazardous chemical
CAS number 7783-06-4 Yes
Reportable quantity 100 500 lbs
Threshold planning quantity
Threshold planning quantity, lower value
Threshold planning quantity, upper value

Bunker Fuel
913997 Version #: 02 Revison date: 23-May-2014 Print date: 23-May-2014
Prepared by 3E Company

9 / 11
SARA 313 (TRI reporting)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>% by wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polycyclic Aromatic Hydrocarbons</td>
<td>130498-29-2</td>
<td>0-10</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>91-20-3</td>
<td>0-3</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
- Benzene (CAS 71-43-2)
- Naphthalene (CAS 91-20-3)
- Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
- Hydrogen sulfide (CAS 7783-06-4)

Safe Drinking Water Act (SDWA)
- Not regulated.

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

US. Massachusetts RTK - Substance List
- Benzene (CAS 71-43-2)
- Clarified oils (Petroleum), catalytic cracked (CAS 64741-62-4)
- Fuel Oil No. 6 (CAS 68553-00-4)
- Fuel oil, residual (CAS 68476-33-5)
- Hydrogen sulfide (CAS 7783-06-4)
- Naphthalene (CAS 91-20-3)
- Sulfur (CAS 7704-34-9)

US. New Jersey Worker and Community Right-to-Know Act
- Benzene (CAS 71-43-2)
- Clarified oils (Petroleum), catalytic cracked (CAS 64741-62-4)
- Distillates (petroleum), heavy catalytic cracked (CAS 64741-61-3)
- Fuel oil, residual (CAS 68476-33-5)
- Hydrogen sulfide (CAS 7783-06-4)
- Naphthalene (CAS 91-20-3)
- Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2)
- Sulfur (CAS 7704-34-9)

US. Pennsylvania Worker and Community Right-to-Know Law
- Benzene (CAS 71-43-2)
- Clarified oils (Petroleum), catalytic cracked (CAS 64741-62-4)
- Distillates (petroleum), heavy catalytic cracked (CAS 64741-61-3)
- Fuel oil, residual (CAS 68476-33-5)
- Hydrogen sulfide (CAS 7783-06-4)
- Naphthalene (CAS 91-20-3)
- Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2)
- Sulfur (CAS 7704-34-9)

US. Rhode Island RTK
- Benzene (CAS 71-43-2)
- Hydrogen sulfide (CAS 7783-06-4)
- Naphthalene (CAS 91-20-3)

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
- Benzene (CAS 71-43-2)
- Clarified oils (Petroleum), catalytic cracked (CAS 64741-62-4)
- Distillates (petroleum), heavy catalytic cracked (CAS 64741-61-3)
- Fuel Oil No. 6 (CAS 68553-00-4)
- Fuel oil, residual (CAS 68476-33-5)
- Naphthalene (CAS 91-20-3)

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
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<tr>
<td>Country(s) or region</td>
<td>Inventory name</td>
<td>On inventory (yes/no)*</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
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<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
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<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
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<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>No</td>
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<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
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<td>New Zealand</td>
<td>New Zealand Inventory</td>
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<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
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</tbody>
</table>

*A “Yes” indicates this product complies with the inventory requirements administered by the governing country(s). A “No” indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

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

<table>
<thead>
<tr>
<th>Issue date</th>
<th>27-June-2013</th>
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<tbody>
<tr>
<td>Revision date</td>
<td>23-May-2014</td>
</tr>
<tr>
<td>Version #</td>
<td>02</td>
</tr>
<tr>
<td>Further information</td>
<td>HMIS® is a registered trade and service mark of the NPCA.</td>
</tr>
</tbody>
</table>

NFPA Ratings

![NFPA Rating Diagram]

References

- ACGIH
- EPA: AQUIRE database
- NLM: Hazardous Substances Data Base
- US. IARC Monographs on Occupational Exposures to Chemical Agents
- HSDB® - Hazardous Substances Data Bank
- IARC Monographs. Overall Evaluation of Carcinogenicity
- National Toxicology Program (NTP) Report on Carcinogens
- ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

Disclaimer

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