Omstar Residual® Fuel Additive for Ships, Trains, and Generators fueled by Diesel 5 or 6, Residual, Bunker, or Heavy Fuel Oil (formerly R-4000)

Description:
Short-chain and long-chain synthetic esters combined with a petroleum distillate carrier.

Function:
Improves furnace performance; increases energy/liter fuel; reduces harmful emissions (SO2, NOx, CO, Hydrocarbons/particulates); cleans exhaust/emissions systems; reduces fuel viscosity for lower pump power required and better cold-weather starting; reduces asphaltenes in fuel tanks, and reduces maintenance of fuel tanks as a result.

Benefits:
- Improves performance of diesel engines by improving combustion efficiency
- Increases Cetane by 4-5%
- Cleans injectors, valves, fuel systems, and exhaust stacks
- Fully combusts (99.99% combustible), no ash or residue
- Adds lubricity to ULSD (Ultra Low Sulfur Diesel) reducing wear of pump components – reduces injection nozzle sizes needed as a result
- Significantly reduces SO2, NOx, CO, and hydrocarbons/particulates
- Environmentally friendly, biodegradable, non-toxic

Hazard Identification:
Principal Hazards: Combustible liquid, prolonged or repeated skin contact may cause dermatitis, see section 11 on the MSDS for complete health hazard information.

Threshold Limits: The PEL (OSHA) and the TLV (ACGIH) is 5 mg/m3 for oil mists.

Primary Routes of Exposure: Non-Hazardous

First Aid Measures:
ORAL: Do not induce vomiting. If conscious, give 2 glasses of water. Get immediate medical attention.

EYES: Flush with water at least 15 minutes. Get medical attention if eye irritation develops or persists.

SKIN: Wash immediately with soap and water. Remove soiled clothing. Get medical attention if irritation develops. Launder contaminated clothing.

INHALATION: Remove exposed person to fresh air. If breathing is labored, administer oxygen and obtain immediate medical attention. If irritation persists or if toxic symptoms are observed, get medical attention.
**Technical Data Sheet**

**Omstar Residual® Fuel Additive for Ships, Trains, and Generators fueled by Diesel 5 or 6, Residual, Bunker, or Heavy Fuel Oil (formerly R-4000)**

**Properties and Compounds:**

<table>
<thead>
<tr>
<th>Property</th>
<th>Standard</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td></td>
<td>Yellow Oil Liquid</td>
</tr>
<tr>
<td>Density 60°F</td>
<td>ASTM-D287</td>
<td>0.8324 g/cm³</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>ASTM-D93</td>
<td>&gt; 230°F</td>
</tr>
<tr>
<td>Calorific power</td>
<td>ASTM-D240</td>
<td>38,438.24 kJ/kg</td>
</tr>
<tr>
<td>Cloud Point</td>
<td>ASTM-D2500</td>
<td>-5°C</td>
</tr>
<tr>
<td>Pour Point</td>
<td>ASTM-D97</td>
<td>-9°C</td>
</tr>
<tr>
<td>Sulfur (%P, S)</td>
<td>ASTM-D129</td>
<td>Less than 0.05</td>
</tr>
<tr>
<td>Humidity (%V)</td>
<td>ASTM-D95</td>
<td>Less than 0.01</td>
</tr>
<tr>
<td>Total Ashes (%P)</td>
<td>ASTM-D482</td>
<td>Less than 0.001 or 99.99% free of ashes</td>
</tr>
</tbody>
</table>

**Metals Spectrograph:**

- Iron: 0.60 ppm
- Silicon: 0.22 ppm
- Magnesium: 0.016 ppm
- Copper: 0.017 ppm
- Nickel: 0.044 ppm
- Calcium: 0.21 ppm
- Aluminum: Tr < 0.01
- Vanadium: 0.069 ppm
- Other Elements: Nil

Loss on Ignition (%P) ASTM-D482 99.99976%

**Additive Application:**

**FUEL:** 30ml of Omstar Residual® for each 125 liters of diesel (or 1oz DX1 to 30 gallons Diesel, 1:4000).

**First Application in fuel** (not oil): Recommend a shock treatment of 150ml Omstar Residual® for each 40 liters of fuel (1oz: 2 gallons). This will produce “Iron Soap” more quickly, and clean injectors and exhaust systems more thoroughly.

**Shipping:**

- **Containers:** 14,000-24,000 liter collapsible bladder in 20’ ISO container, 55 gallon drum, 20 liter container. Do not use low-density polyethylene containers, only high-density polyethylene (HDPE), recycling code “2”
- **Transportation Information:** Shipping Classification: 65 Non-Hazardous; DOT Shipping Name: Oil, N.O.S; UN/NA Number: NA 1270.