**Hybase® M-11D**

*Overbased Magnesium Sulfonate*

*Hybase® M-11D* is a highly overbased magnesium sulfonate fuel oil additive with an average particle size of 0.06 microns containing 14 wt. % magnesium. This product is a completely oil soluble, clear brown colored liquid with excellent stability in the presence of water. Hybase® M-11D overbased magnesium sulfonate will form high melting point compounds with vanadium during combustion, therefore reducing corrosion of the turbine blades and sulfur trioxide formation.

**APPLICATIONS**

Gas turbines operating on oil, crude oil or heavy fuel oil.

**TYPICAL TREAT**

Recommended dosage for gas turbines is 3 parts Mg to 1 part V in the fuel. It can be directly added to the fuel oil, or injected into the fuel line prior to combustion.

**TYPICAL DATA**

<table>
<thead>
<tr>
<th>PROPERTIES</th>
<th>TEST METHOD</th>
<th>TYPICAL VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium, wt. %</td>
<td>ASTM D4951</td>
<td>11.2</td>
</tr>
<tr>
<td>Magnesium Sulfonate, wt. %</td>
<td>ASTM D3712</td>
<td>10.0</td>
</tr>
<tr>
<td>Total Base Number, mg KOH/g</td>
<td>ASTM D2896</td>
<td>505</td>
</tr>
<tr>
<td>Viscosity @ 100°C, cSt</td>
<td>ASTM D445</td>
<td>15</td>
</tr>
<tr>
<td>Flash Point, COC °C</td>
<td>ASTM D92</td>
<td>100</td>
</tr>
<tr>
<td>Specific Gravity 15°C</td>
<td>ASTM D4052</td>
<td>1.15</td>
</tr>
<tr>
<td>Color (dilute), rating</td>
<td>ASTM D1500</td>
<td>3.0</td>
</tr>
<tr>
<td>Sediment, vol. %</td>
<td>ASTM D2273</td>
<td>0.02</td>
</tr>
</tbody>
</table>
HANDLING INFORMATION

Hybase® M-11D is a liquid overbased magnesium sulfonate fuel additive and is normally handled at elevated temperatures. For general purposes, the following storage and handling temperatures are recommended:

STORAGE HANDLING
60-80°C (140-176°F) 80-90°C (176-194°F)

SAFETY INFORMATION
For more extensive information on the safe handling and use of this product, see the Safety Data Sheet.

SHIPPING INFORMATION
Petroleum Oil, N.O.I.B.N.  
Tank cars, tank trucks and non-returnable 55-gallon steel drums.
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