Legend™ LD-2150 Cationic Liquid Friction Reducer

VERSATILE, FRESH WATER FRICTION REDUCER PROVIDES EFFECTIVE PERFORMANCE UNDER RANGE OF CONDITIONS

OVERVIEW
Legend™ LD-2150 cationic liquid friction reducer is designed to help reduce pipe friction pressures generated while pumping during hydraulic fracturing treatments. An oil-external emulsion, it is easily inverted and/or broken and dispersed in water with a minimal amount of shear. LD-2150 friction reducer is very effective at concentrations as low as 0.25 to 0.5 gal/1,000 gal in fresh water and can tolerate more dissolved solids in the water than anionic friction reducer. Because it is delivered as a liquid, LD-2150 is easier to mix than powdered materials and its low pour point temperature makes it suitable for use in harsh, cold weather environments. In addition, LD-2150 friction reducer is compatible with CO₂, and can be used for all pH ranges including low-pH fluids.

APPLICATIONS
LD-2150 cationic friction reducer is used to reduce pipe friction pressure while pumping during hydraulic fracturing treatments, including low temperature and low-pH fluid applications.

COMPATIBILITIES
LD-2150 friction reducer is compatible with many stimulation chemicals such as nonionic and cationic surfactants, and phosphonate-based liquid scale inhibitor. Because compatibility depends on chemical concentrations, LD-2150 friction reducer should always be tested for compatibility when used with other materials, and particularly, with anionic materials.

Product Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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</thead>
<tbody>
<tr>
<td>Form</td>
<td>White emulsion</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.05</td>
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<tr>
<td>Density</td>
<td>8.75 lb/gal</td>
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<tr>
<td>Pour Point</td>
<td>&lt; -30°F (-34°C)</td>
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<tr>
<td>Flash Point</td>
<td>&gt; 200°F (93°C)</td>
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<tr>
<td>Ionic Charge</td>
<td>Cationic</td>
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</tbody>
</table>

FEATURES
» Cationic friction reducer
» Oil-external emulsion in liquid form
» Low pour point temperature

BENEFITS
» Effective at low concentrations in fresh water
» Tolerates more dissolved solids than anionic friction reducer
» Easy-to-mix liquid form
» Works in harsh, cold weather environments
» Suitable for all pH ranges and in low-pH (<4) fluids
» Compatible with CO₂
For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com/multichem