FORM-A-SET RET retarder should be used in situations when the FORM-A-SET system is mixed or spotted at temperatures higher than 80 °F (27 °C).

FORM-A-SET RET retarder often is required by other FORM-A-SET systems, such as FORM-A-SET AK and FORM-A-SET AKX. The concentration required depends on both mixing and down-hole temperatures. When used with FORM-A-SET, it is essential that FORM-A-SET RET retarder be added to the water before adding FORM-A-SET. It may be added to the water before or after FORM-A-SET AK or FORM-A-SET AKX, but must always be added before FORM-A-SET XL.

Typical Physical Properties
Physical appearance ........................................................................................................................................................................................................... Clear liquid
Odor ....................................................................................................................................................................................................................... None
Solubility in water ........................................................................................................................................................................................................... Soluble
Specific gravity ............................................................................................................................................................................................ 1.31 – 1.34 @ 68 °F (20 °C)
Flash point ........................................................................................................................................................................................................ >200 °F (93 °C)

Applications
FORM-A-SET RET retarder delays the setting time of the FORM-A-SET family of cross-linked pills. It is used where the pills must be mixed in hot water or spotted at high downhole temperatures.

Since FORM-A-SET contains a crosslinking additive, it is essential that FORM-A-SET RET retarder be added to the water before adding FORM-A-SET. When using FORM-A-SET products, such as FORM-A-SET AK and FORM-A-SET AKX that do not contain a crosslinker, FORM-A-SET RET must be added before FORM-A-SET XL.

The following table should be used as a guide to the concentrations needed for higher bottomhole temperatures. It is important to pilot test to assure adequate retarder is available.

<table>
<thead>
<tr>
<th>Bottomhole Temperature</th>
<th>lb/bbl of FORM-A-SET RET Retarder in water</th>
<th>kg/m³ of FORM-A-SET RET Retarder in water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 80 °F</td>
<td>Up to 27 °C</td>
<td>–</td>
</tr>
<tr>
<td>80 – 120 °F</td>
<td>27 – 49 °C</td>
<td>4</td>
</tr>
<tr>
<td>120 – 150 °F</td>
<td>49 – 66 °C</td>
<td>6</td>
</tr>
<tr>
<td>150 – 200 °F</td>
<td>66 – 93 °C</td>
<td>10</td>
</tr>
<tr>
<td>200 – 250 °F</td>
<td>93 – 120 °C</td>
<td>16</td>
</tr>
<tr>
<td>&gt;250 °F</td>
<td>&gt;120 °C</td>
<td>Contact Technical Services</td>
</tr>
</tbody>
</table>

Advantages
• Allows FORM-A-SET products to set in four hours under a wide range of temperatures
• Mixes easily

Limitations
• Required in all applications where bottomhole temperatures exceed 80 °F (27 °C)
• May be required when mixing at temperatures above 80 °F (27 °C) or when set times must be delayed beyond four hours
• May biodegrade when added too far in advance
Toxicity and Handling
Bioassay information is available upon request.
Handle as an industrial chemical, wearing protective equipment and observing the precautions described in the Material Safety Data Sheet (MSDS).

Packaging and Storage
**FORM-A-SET Ret retarder** is packaged in 5-gal (18.9-L) cans containing 55-lb (25-kg).
Store in a dry, well-ventilated area. Keep container closed. Keep away from heat, sparks and flames. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.