APPLICATIONS
- Add lubricity to water-based drilling fluid
- Facilitate core entry and removal
- Optimize high-angle, exploratory drilling

ADVANTAGES
- Lubricates the inner tube, which allows highly fragmented or unconsolidated cores to enter easily and not be lost to the hole after coring
- Reduces core-removal time

LIMITATIONS
- Can grease when exposed to a high-pH, high-hardness environment
- Designed for land drilling applications

TUBE LUBE<sup>®</sup> lubricant is used to lubricate the inner core barrel and core to facilitate core entry and removal. This lubricant provides increased lubricity to water-based drilling fluids. It can be used as a maintenance addition or can be added when torque and drag become a problem. TUBE LUBE lubricant is especially applicable in high-angle, exploratory drilling to reduce bit wear and increase effective bit weight.

Because this lubricant is made completely of natural fatty acids, it is 100% biodegradable and nontoxic.

Method of addition
To lubricate the inner core tube, put a ball of TUBE LUBE lubricant inside the inner core barrel prior to running into the core barrel. The lubricating ability can be increased by coating the ball with a polymer, such as POLYPAC UL<sup>®</sup> ultralow-viscosity polyanionic cellulose, prior to inserting the ball into the inner tube. TUBE LUBE lubricant can be added to the drilling fluid to increase the lubricity. For most applications, the concentration of this product is 0.5–1.5 vol %. At this concentration 1.5–4.5 galUS [5.7–17.1 L] of lubricant per 300 galUS [1,135 L] of fluid is required to build the proper ratio. Some cases can require more paste. The quantity depends on the mud type and drilling characteristics.

Toxicity and handling
Bioassay information is available upon request.

Handle as an industrial chemical, wearing protective equipment and observing the precautions described in the MSDS.

Packaging and storage
TUBE LUBE lubricant is packed in 3-galUS [11.4-L] buckets.

Typical Physical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical appearance</td>
<td>Brown opaque paste</td>
</tr>
<tr>
<td>Odor</td>
<td>Faint soap</td>
</tr>
<tr>
<td>pH</td>
<td>9.5</td>
</tr>
<tr>
<td>Solubility</td>
<td>100%</td>
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</tbody>
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