

# CLEAN-LUBE

## Brine lubricant

### APPLICATIONS

- Freshwater-, seawater-, and brine-base mud applications

### ADVANTAGES

- Decreases the coefficient of friction (COF) and reduces torque and drag
- Mitigates the risk of differential sticking of the pipe in the wellbore
- Improves lubricity for sliding operations and high build rates at concentrations as low as 0.5% by volume
- Maintains stability over a wide range of temperatures and pressures as well as in the presence of high hardness and pH

CLEAN-LUBE\* brine lubricant is a nonsulfur surfactant blend developed for use in drilling fluids and brines to decrease the COF, thus reducing torque and drag. The lubricant is efficient for long periods of sliding and for high-build-angle rates to quickly reduce friction and thus improve tool response and longevity.

To overcome a range of challenges, the lubricant can be added at volumes as low as 0.5% and as high as 3%. Pilot testing is recommended to determine any effects on the system properties for all initial applications and any subsequent large treatments. The mixing process requires less shearing because it is highly dispersible.

The CLEAN-LUBE lubricant can be directly added to the active system or can be added as premix. During mixing, persistent foam may occur on top of the fluid. Though this foam will gradually disappear, a defoamer can be used to speed up the process.

The lubricant is readily dispersible in water-base mud and in brines ranging from freshwater to saturated salt and will not be affected by high-pH and high-hardness conditions. It forms a milky dispersion in brines that is stable and can easily pass through fine shaker screens.

COF data derived from testing using both high-temperature lubricity test (HTLT) and the lubricity evaluation monitor (LEM) devices gave the following results.

Fluids	HLTL	LEM
Water	0.34	0.33–0.35
Seawater	0.28–0.30	0.28–0.30
Seawater with 1% of CLEAN-LUBE lubricant by volume	0.12–0.13	0.16–0.17
Seawater with 3% of CLEAN-LUBE lubricant by volume	0.11–0.12	0.16–0.17
Seawater with 1% of conventional brine lubricant by volume	0.16	0.18–0.19
Seawater with 3% of conventional brine lubricant by volume	0.14–0.16	0.16–0.18

### Typical Physical Properties

Physical appearance	Amber liquid
Specific gravity	0.9–1.0
Flash point	> 200 degF [93 degC]
Viscosity at 68 degF [20 degC]	60 cP [0.06 Pa.s]
Odor	Oily
Solubility in water	Dispersible in water

### Limitations

Lubricant is not fully soluble and may contribute to oil and grease volumes during discharge testing.

### Toxicity and handling

Bioassay information is available upon request. Handle as an industrial chemical, wear personal protective equipment, and observe the precautions described in the material safety datasheet (MSDS).

### Packaging and storage

The CLEAN-LUBE lubricant is packaged in 55-galUS [208-L] drums and in tote tanks. Store away from sources of heat or ignition. Keep container closed at all times. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping, or stacking.