



# Water Emulsifiable Lubricant

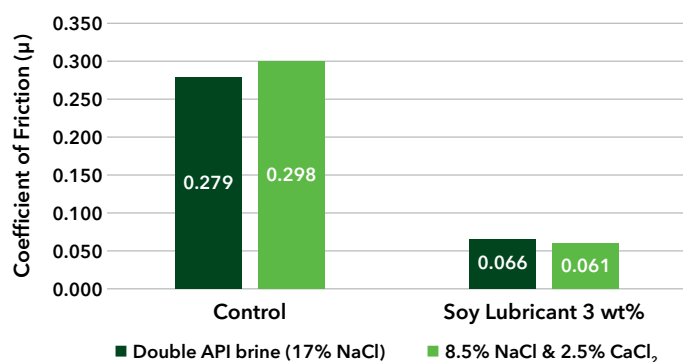
Airable has developed a soy-based lubricant intended for oil and gas (O&G) applications. The formulation is tolerant to brines commonly encountered in down-hole drilling and is effective at low loading levels. Furthermore, our lubricant is designed to perform under the extreme pressures demanded by the O&G industry. The soy-based formulation contains 93% bio-based carbon and is biodegradable—a critical attribute for a product that is going directly into the ground.

## THE TECHNOLOGY

The formula is made primarily with a soy-derived base oil that provides lubricity. Additives enhance performance under extreme pressure, improve film forming on metal, and increase stability in brines common in O&G environments.

To demonstrate efficacy, Airable hired a third-party lab to run lubricity studies using an Ofite lubricity testing instrument, which reads the coefficient of friction ( $\mu$ ). For oil-based drilling fluid, this measurement is generally around 0.08, so values below 0.08 are useful in the O&G industry. During testing, samples were sheared for 5 minutes at 3 wt% loadings in both double API brine (17% NaCl) and an 8.5% NaCl & 2.5%  $\text{CaCl}_2$  brine and then subjected to 150 in/lbs of force. Results indicate a >400% reduction in coefficient of friction compared to a control without any lubricant, with values as low as 0.061.

**Ofite Lubricant Testing**



## HIGHLIGHTS

- Biodegradable, with 93% bio-based carbon
- Good performance under extreme load
- Effective at low loading
- Stable in brine environments
- Stable in caustic and lime environments