



TECH TIP - PERCUSSIVE TOOL LUBRICATION

Vegetable oil vs. synthetic ester Rock Drill Oils

When selecting a rock drill oil for improved wear performance, it is essential to consider the environment that the lubricants will be exposed to.

For example, small diameter (6") DTH drills typically used for water wells in mixed soil / rock substrates are good candidates for vegetable oil based lubricants, because of their environmental acceptability. Heat generation in this type of application is moderate, and is why a vegetable oil based lubricant is often a good choice for this application. Unsaturated esters, including vegetable oils, are limited to lower temperature applications.

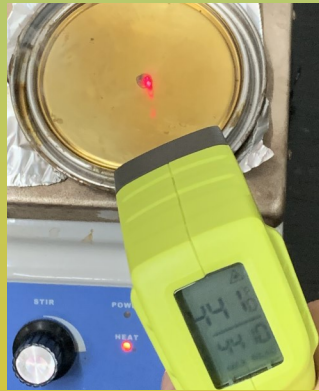
However, larger bore drills and hard substrates can generate considerably more heat in drills than a vegetable oil can tolerate. Manufacturer specs often indicate that vegetable oils have a flash point around 600°F, but these measurements are made based on flash point testing conditions in which the veg. oil is placed in a bath, and the temperature is raised until the vapor emitted by the fluid can ignite when exposed to a flame source.

In percussive drills, the oil film is very thin, as it is essentially mist lubrication. Under these conditions, vegetable oil RDOs will rapidly varnish at temperatures in excess of 400°F. While varnish is good for seasoning a cast iron pan for cooking, or for finishing antique furniture, it is highly undesirable in equipment lubrication, leading to deposits that can cause premature wear. (see photo right)



Deposits in equipment are detrimental to service life. Mobil 1, which is a highly rated motor oil, is formulated with synthetic esters, and is recognized for extended intervals between oil changes, and for resistance to carbon deposits, resulting in decreased engine wear.

The synthetic esters used in **Liquid Shield rock drill oils** are designed to perform in hard drilling environments and applications. They feature excellent hydrolytic stability, oxidative stability, biodegradability, lubricity, high viscosity index and low-temperature properties. Synthetic esters are the best choice to provide clean, varnish-free lubrication at temperatures up to 600°F (300°C). (See photo at right Liquid Shield exposed to 441°F for 20 minutes). By eliminating oxidative weak points, LS synthetic esters are designed to operate at high temperatures and will tend to evaporate cleanly before undergoing oxidative polymerization so they will not form deposits and varnish.



Liquid Shield rock drill oils provide an excellent return on your lubricant budget investment. They are priced reasonably close to conventional rock drill oils, and are very low odor, resist freezing, and provide exceptional wear protection.

