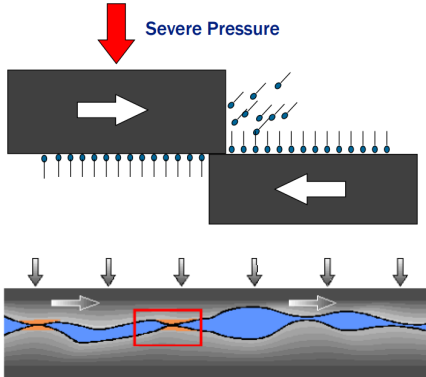


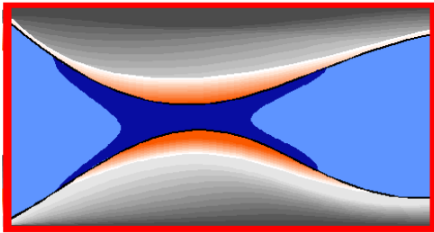
Rock drill oils (RDOs) are essential to proper percussive drill function

However, not all RDOs have the same ability to reduce friction, which can be caused by minimal lubricating films between mating surfaces, and by lubricating films that break down when subjected to heat. Most RDOs are designed to provide decent protection under moderate operating conditions, but begin to lose effectiveness as heat increases due to extremes of load and temperature produced by hard drilling.

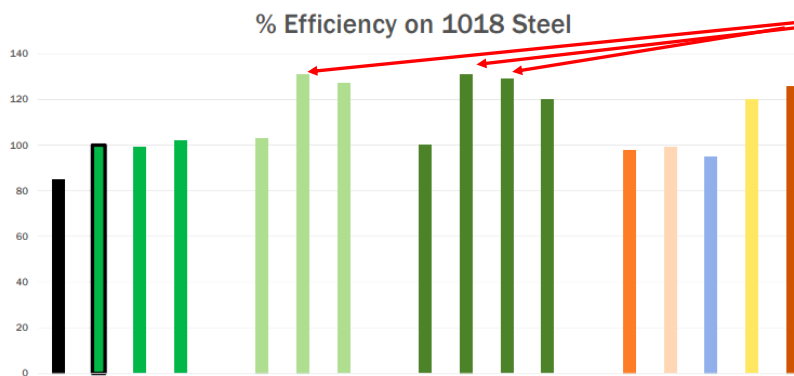


Overcoming Friction: As pressure becomes more severe, lubricating liquid is pushed out of the contact zone. Traditional boundary lubricants adhere to surfaces with electrostatic interactions as their molecules are similar to fatty acids. However, electrostatic interactions are not very strong bonds, and if the pressure is severe enough the adhered layer could be wiped away.

As load on the drill increases, it creates heat buildup, which causes the RDO to thin out, reducing the essential space between adjacent surfaces. Surface roughness (asperities) can come into contact, creating rapid heat build up. Inadequate lube films can result in temperatures that can damage the drill, reducing service life.



The ideal RDO settles into valleys and on peaks of asperities and is difficult to remove and is shear stable, which means that the lube film does not break down due to harsh mechanical agitation. The lube has a high viscosity index, which means that it "thins out" less than competitors when subjected to high heat. Asperities do not break, less heat is generated, tools run cooler, wear is much reduced.



The chart indicates the efficiency of various oils to reduce friction between mating surfaces.

The base oils in PolairDrill™ severe service RDOs were compared against many other base oils and oils combined with various EP / AW additives. Polair-Drill™ RDOs were shown to have as much 40% greater lube film strength than the other oils tested, including those fortified with additives. Higher film strength imparts greater lubrication film between parts, reducing wear.

