

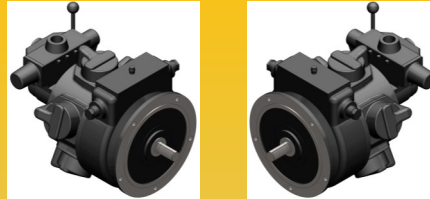


Liquid Shield polar rock drill oils for mechanical raises Eliminating motor freeze up - improving air quality

Liquid Shield Polar rock drill oils / air tool lubricant
Powerful, economical protection for miners and equipment



Case study performed by Ray Neufeld - Mechanical Superintendent - Cementation Americas



Globe RM510 - 22 KW/30 HP

Freeze up of air motors, commonly used to drive mechanical raise platforms, can cause delays in production and frustration amongst crews who have work goals to achieve.

Ray Neufeld, an experienced Mechanical Superintendent with Cementation Americas, decided to investigate solutions to the freeze up issue, and conducted a test using Liquid Shield polar rock drill oil versus the traditional rock drill oil that was on site. His results were as follows:



“One of the tests I did was to have two 510 Globe pneumatic motors running side by side, one using traditional rock drill oil and one running Liquid Shield, we had a lot of moisture in the air supply, after 15 mins the motor using traditional rock drill had ice built up all over the motor and was missing badly and blowing ice out of the exhaust port. The motor using Liquid Shield was dripping water off of the jugs and out of the exhaust but there was no missing and it was running just fine. The motor with traditional rock drill oil completely stopped turning after 1/2 hour, the motor with Liquid Shield was left running for 2 hours and never missed a beat. Just one of the tests I performed.”

Ray is a LinkedIn member. He has always demonstrated an interest in optimizing lubrication systems in the operations that he is assigned to. He performed a number of tests using Liquid Shield polar rock drill oils, and provides solid testing results that are useful to any mining venture.



Non Regulated



Polar Cleanliness and Air Quality

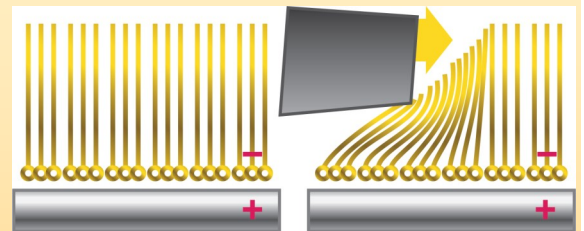


Conventional rock drill oils produce carbon, soot and smoke when exposed to high heat in hard drilling conditions. In well ventilated stopes, these contaminants are not able to accumulate in the workspace. However, in raise mining or in tight locations, ventilation may be inadequate, resulting in oil stains on exposed skin.

Liquid Shield polar rock drill oils resist heat breakdown much better than regular rock drill oils, and produce a much cleaner work environment.

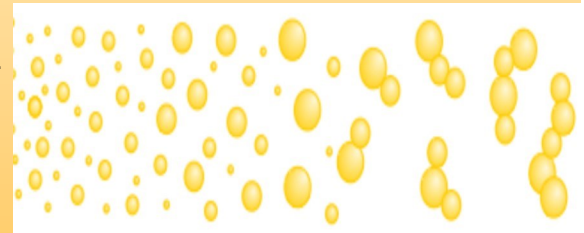
How do Liquid Shield polar rock drill oils work?

Liquid Shield polar rock drill oils are formulated with negatively charged fluids that adhere tenaciously to steel surfaces, which are positively charged. This attraction causes the lubricant to coat all components of the tool, ensuring consistent lubrication. This polar attraction also helps to minimize the tendency of oils to form oil fog caused by turbulent compressed air.



Agglomeration

Liquid Shield polar rock drill oils incorporate an additive that causes the oil particles to cling to each other and recombine when they collide in the tool. The combination of polar base fluids and this additive create a fluid that resists atomization within the tool, and forms large oil droplets when exiting the tool.



Particle size - Bigger is better

When it comes to oil particles expelled from the tool, size matters. Large particles tend to settle out rapidly, avoiding inhalation. Those particles that are inhaled tend to remain in the upper respiratory tract, posing minimal risk to personnel. Liquid Shield polar rock drill oils form large particles that tend to settle out rapidly. Some conventional rock drill oils can create oil fog that remains airborne for long periods of time, increasing exposure risks.

