

FIVES CINCINNATI APPROVAL AND WHAT IT MEANS

Lubsoil Super Hydraulics are not just your typical hydraulics. They have been designed to meet and exceed the requirements of today's demanding hydraulic systems. Tulco is happy to announce Lubsoil Super Hydraulics AW 32, 46 and 68 have received approval from Fives Group and are listed in the official "Special Manual Lubricants" Publication no. HD.2002.5264.

As an industrial engineering Group, Fives designs and supplies machines, process equipment and production lines for the world's largest industries. Key industrial markets served include aerospace, automotive and truck, heavy equipment, oil and gas, rail, wind energy and general machining. With manufacturing and support operations strategically located worldwide, Fives and its Metal Cutting | Composites activity offer comprehensive lines of equipment and technologies including turning, milling, composites processing, laser welding and cutting with the associated support services. Fives is known for its technological expertise and competence in executing international projects.

Hydraulic systems offer an ideal condition for thermal and oxidative oil degradation due to the presence of air/oxygen, higher temperatures, water, and metals. Oil oxidation can generate harmful acids and sludge leading to system failure. At elevated temperatures, the long hydrocarbon chains in mineral oils may break apart into shorter hydrocarbon chain lengths (thermal decomposition). While some of the chains may vaporize and escape into the atmosphere, others tend to combine with other chains (polymerization) to form hard, sticky by products known as gums, varnish, and other deposits. Thermal stability is a lubricant's ability to resist breakdown under conditions of high temperatures.

Fives Cincinnati, (formerly Cincinnati Milacron), a leading manufacturer of machine tools, originally developed this test method to assess the thermal stability of the additives and base oils that were being used in their equipment. The motivation behind this test was the high cost of warranty claims this manufacturer experienced.

The test apparatus consists of a beaker, a copper and steel test rod, and an electric convection oven capable of maintaining 135°C (275°F) for 168 h. The copper and steel test rods are polished, weighed, and placed into a beaker of test oil. The rods are arranged in an "X" pattern with a single contact point. The assembled apparatus is placed in the test oven.

At the end of the test period, the test rods are compared to a reference chart to determine the degree of chemical attack. Ideally, the rods should show little evidence of any discoloration. The oil is evaluated to determine any changes in viscosity, to measure any increase in acid number, and to determine the amount of sludge.

This method is widely used for approval purposes and is useful in evaluating the thermal stability of lubricants. The extremely high temperatures, more than double normal operating temperatures of a mineral hydraulic oil, is very severe. Less than one percent of hydraulics on the market actually have gone through the above test and passed, gaining Fives Group approval.

In machinery applications where reliability is demanded and operating conditions are stressful, there is a need for preventing varnish and sludge from forming on critical components of a hydraulic system. Varnish and sludge can propagate at an exponential rate, creating hot spots, prematurely plugging filters or oil gallery orifices, and coating heat exchangers, rendering them thermally inefficient. Hydraulic control systems and valves can gum up or seize, causing unit trips and starting faults. Also, hard particles can adhere to varnished components and cause premature wear. Typical signs of varnish and sludge are higher operating temperatures and higher operating pressures which both lead to a short lifespan for equipment, costing downtime and high maintenance costs.

Using Lubsoil Super Hydraulics will help prevent sludge and varnish from forming, extending the life of equipment and can extend drain intervals with a comprehensive oil analysis program. Not all hydraulics are the same and careful consideration should be used when choosing the life blood of a piece of equipment. Lubsoil Super Hydraulics have been proven not only through extensive laboratory testing and approval processes but also in equipment running under the harshest conditions.