

Lubritherm[®] All-Temp Hydraulic Fluid is a water-based propylene-glycol hydraulic fluid designed as a direct replacement for petroleum, vegetable, or synthetic hydraulic oils, with an ambient operating range from -60°C to +80°C (-75°F to +175°F). Lubritherm has exceptional anti-wear lubrication properties and thermal stability. It is totally compatible with hydraulic seals/metals.

Originally Approved by:



under the Environmental Choice Program

Lubritherm[®] All-Temp Synthetic Hydraulic Fluid:



- **Applications: Hydraulic/Hydrostatic Systems to 6,500 psi**
*Industrial *Military *Mobile equipment
- **Ambient Extreme temp. range -60°C to +80°C (-75°F to +175°F)**
- **Fire-proof. Tested per ISO 12922, the Non-Flammable Standard Specification for Hydraulic Fluids.**
- **Biodegradability: Tests prove Lubritherm is Absolutely Non-Toxic per OECD 209.**

Lubritherm is originally approved under the Environment Canada's Environmental Choice Program using ISO 14000 performance testing:

“Practically and Absolutely Non-Toxic and Biodegradable”. Testing included:

*Performance requirements *Limits on additives *Biodegradability *Low toxicity to fish

Accidental spills or leaks from specialized fire resistant hydraulic fluids are impossible to prevent. **Lubritherm is SAFE** in a spill or leak. No government reporting is required; just flush Lubritherm down the drain, leave the spill on the ground, or in the waterways. There will be no harm whatever (see MSDS).

Safety in the work environment for operators, as well as the general public, is also provided in terms of walking safely on accidentally spilled Lubritherm hydraulic fluid due to burst hoses or leaking hose connections onto a walkway or platform. Lubritherm behaves the same as walking on spilled water, resulting in substantially better footing, as compared to hydraulic oils which are very slippery.

Lubritherm Hydraulic Fluid has some nice out-of-doors advantages:

1. Condensation from water is no issue; we contain water and propylene glycol.
2. Cavitation is no longer an issue: for example -as oil heats up it absorbs more and more air bubbles which cause cavitation in the pump, and the 'classic' shuddering of the hydraulic rams. Lubritherm has no oil, and does not have this problem.
3. **Instant hydraulic response time** with non-compressibility and lower viscosity.
4. No more heaters for cold environments; Lubritherm operates from -60°C to +80°C (-75°F to +175°F). Lubritherm contains over 60% Propylene Glycol; it cannot freeze at even colder temperatures.

Lubritherm[®] All-Temp

Anecdotal Data

Example: an Alberta company has been using Lubritherm All-Temp hydraulic fluid since May 2005 on gas actuators on their gas pipeline system. This has resulted in the removal of cold weather maintenance problems that characterise the use of petroleum and vegetable based oils. Of course there are no clean-up requirements in case of spills.

Lubritherm shows very *high performance in* any working environment, including *severe environments*. In over twelve years of field operations with various hydraulic/hydrostatic applications we have not needed to do any Lubritherm replacement due to product break-down.

Example: Lubritherm hydraulic fluid has been used over the last twelve years in Two Knuckle Boom Cranes running with no problems throughout Northern Alberta. The cranes have a capacity 10 - 30 tonnes, with piston type pumps running at 5,000 and 4,500 psi.

Heat does not affect Lubritherm, except in possible evaporation of the water content if the cap is left off the reservoir. The viscosity comes down under heat to 2cSt @ 100°C which is about the viscosity of hot oil and water at 100°C. I will recap an experience by Viterra (Agricore) who are one of the largest grain handlers in Canada.

Example: Viterra have been using Lubritherm hydraulic fluid for the past eight years right across Canada in their bin sweeps and grain elevators. They operate year round cold or hot. One unit ran at 140°C for about 6 months (kept their heaters on by oversight) before they noticed it. No ill effects at all were observed to the hydraulic unit or the Lubritherm. The cap was on the reservoir, so no evaporation took place. Condensation within the reservoir was noticeable though (if the water had boiled off, it just needs topping it up with Lubritherm hydraulic fluid).

Lubritherm All-Temp Hydraulic Fluid operates continuously from -60°C to 80°C (-75°F to +175°F) but will easily handle right up to boiling point. **Lubritherm has no real temperature limits** the way oil has, its only limit is the boiling off of the water if operating above 100°C boiling point. So, stay below that or ensure topping up from evaporation of the water. Propylene glycol and the other ingredients, including lubricity agents, in the Lubritherm are not subject to heat limitations under 190°C.

Cost Reductions and other benefits when using Lubritherm All-Temp Hydraulic Fluid:

- Simpler initial hydraulic system change-over from mineral or vegetable oils to Lubritherm Fluid.
- **Service life, up to ten years.**
- Lubritherm hydraulic fluid does not require to be changed out should a small amount of mineral or vegetable oil be inadvertently added to the system (Lubritherm digests it by biodegradation).
- Maintains hydraulic fluid integrity over many years of operation by eradicating ingressed contaminants through synthetic catalytic biodegradation.
- **Removes liability and environmental cleanup costs**, when broken hydraulic connections may cause accidental hydraulic fluid spills.
- Over 100,000 hours of reliable operation accumulated in demanding applications such as excavators, knuckle boom cranes, backhoes, picker cranes, ships, grain elevators, fork lifts, power-tail-gates, etc.