

SLFi Barrier Fluids



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SLFi barrier fluids are specifically formulated synthetic fluids that meet the demands of double and tandem mechanical seals for both food-grade and non-food-grade processes. As increasingly restrictive leakage and safety regulations are enacted, a growing number of end users are relying on various multi-seal solutions. These multi-seal arrangements require a high-quality buffer or barrier fluid, depending on whether the system is pressurized or not. The use of these fluids can increase fluid life, decrease parasitic power losses, and reduce seal blistering while offering improved compatibility. SLFi barrier fluids provide these benefits and more to protect your investments.

Superior Oxidative Stability - Extended Fluid Life

SLFi barrier fluids are formulated with an advanced additive package that provides superior oxidative stability and fluid life. When used in high-temperature applications, SLFi barrier fluids have greater resistance to the destructive oxidation processes which can lead to carbon and varnish deposits. The oxidative stability of the fluid contributes to longer fluid-change intervals and can lead to reduced operating costs.

Excellent Fluidity & Lubrication - Extreme Condition Protection

With pour points as low as -70°F, SLFi barrier fluids offer superior fluidity at various process temperatures. This makes SLFi barrier fluids the ideal choice for cryogenic and low-temperature applications. The increased fluidity lowers parasitic pumping losses, increasing system efficiency and allowing more complete removal of contaminants from the mechanical seal passages. SLFi barrier fluids also provide excellent lubricity. The advanced additive package protects metal surfaces from corrosion while reducing friction between the interacting parts. According to an MIT study, 50 percent of machinery's loss of usefulness is due to mechanical wear and another 20 percent is the result of corrosion of machine parts.¹



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Exceptional Heat-Transfer Capability - Exceptional Cooling

Maintaining a cool seal face is vital to the longevity of the part. SLFi barrier fluids are formulated to offer superior heat-transfer capability at a wide temperature range. The fluid induces turbulence in the fluid flow, allowing improved heat-removal rates.

The higher specific gravity of SLFi barrier fluids increases the heat capacitance. This allows the fluid to remove more heat energy without as high of a rise in bulk temperature. The high flash point and low vapor pressure also ensure that SLFi barrier fluids can be utilized safely, even in the most demanding high-temperature applications.

Reduced Blistering on Carbon-Graphite Seals - Extended Seal Life

The Society of Tribologists and Lubrication Engineers has found that blistering of carbon-graphite seals is an effect caused by a fracture process. It derives from the viscous friction forces present from the instant that relative rotation begins between the seal faces.² This destructive process can destroy seals in a relatively short period of time without proper attention. SLFi barrier fluids are specifically formulated to reduce the breakaway torque on machinery startup that causes blistering.

Broad Compatibility - Simplified Fluid Transitions

SLFi barrier fluids are top-off compatible with almost all mineral oil, PAO, and diester based fluids on the market. However, they cannot be mixed with glycol or silicone based fluids.

SLFi barrier fluids offer a wide seal compatibility range.

Some common seal materials compatible with SLFi barrier fluids:

- | | |
|---------------------------------|----------------------------|
| • Viton® | • Nitrile |
| • Buna N | • Neoprene |
| • Silicone | • Teflon® |
| • Epichlorahydrin | • Polyurethane Ester |
| • Ethylene/Acrylic | • Polysulfide |
| • Fluorosilicone | • Polycrylate |
| • Chlorosulfonated Polyethylene | • Propylene Oxide |
| • Kalrez® | • Chlorinated Polyethylene |
| • Fluoroelastomers | • Nordel™ |

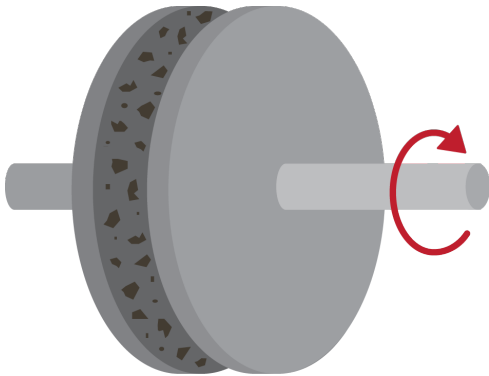
SLFi can confirm compatibility of seal materials not listed above as well.



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Contaminants in barrier fluids can increase seal wear. SLFi barrier fluids are manufactured to meet ISO Cleanliness Code of 8/5



SLFi barrier fluids meet the requirements of USDA regulations for H-1 and H-2 food grade applications. They meet the requirements of the FDA's CFR Title 21 sections 178.3620(a) and (b), 175.105, 172.878, 176.200

High Purity & Low Moisture Content - Reduced Seal Wear

Due to mechanical seal designs, there is a high probability of the barrier fluid coming in contact with the process fluid. SLFi barrier fluids are manufactured with a low moisture content and do not contain impurities such as amines, sulfur or vanadium, among others. Similar to moisture contamination, impurities also can prove to be harmful or reactive in process fluids. SLFi barrier fluids have an ISO cleanliness code of 8/5.

Increased Safety

SLFi barrier fluids are composed of non-toxic and non-hazardous materials. This negates any need for special storage or handling protocols. The fire-resistant formulations also increase plant safety in the event of a leak or fire.

Food Grade Approval & Biodegradable Formulations

SLFi barrier fluids meet the requirements of USDA regulations for H-1 and H-2 food grade applications. They meet the requirements of the FDA's CFR Title 21 sections:

- 178.3620(a) and (b)
- 175.105
- 172.878
- 176.200

They also conform to ISO 21469 specifications and meet the requirements described under section 210:

- 177.2260 and 2800
- 178.3570 and 3910

These fluids can also be used in non-food-grade applications. When needed, a biodegradable formulation is also available.

Easy Disposal - Environmentally Friendly

SLFi barrier fluids do not require a special disposal process and can be disposed of in the same manner as typical mineral oils. This allows SLFi barrier fluids to be recycled or burned in heaters to reduce their environmental impact.

Made in the USA

SLFi barrier fluids are proudly manufactured in the United States of America at our Jacksonville, Florida, production facility.

Advanced Applications

Certain applications may require special needs regarding reactivity, solubility, and so forth. SLFi can develop custom barrier fluids for your unique applications. Please contact our technical services department for more information at 855-215-2740.

¹Rabinowicz, E.E. *Friction and Wear of Materials*, 2nd edition. John Wiley & Sons, New York, 1995.

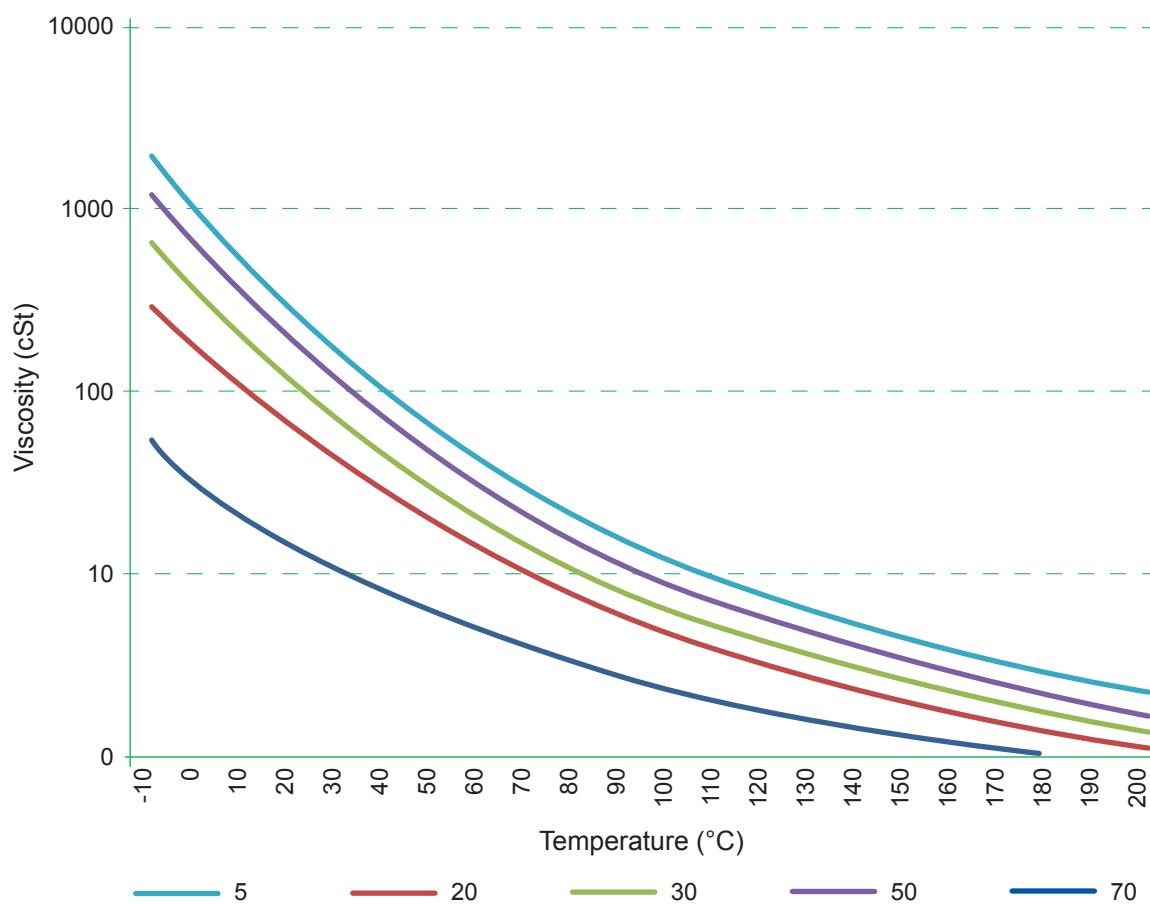
²Guichelaar, P. J., & Wilde D. A., & Williams M. W., "The Effect of Oil Type on Blister Formation in Carbon-Graphite Mechanical Seals," *Lubrication Engineering*, Society of Tribologists and Lubrication Engineers, August 2001.



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SLFi Synthetic Food Grade Fire Resistant Barrier Fluid

Lubrication Properties	5	20	30	50	70
Viscosity @ 40°C (cSt)	7.2	20.5	33.1	49.1	70.3
Viscosity @ 100°C (cSt)	2.19	4.28	5.8	7.6	10.0
Flash Point °F	368	434	462	474	523
Auto-Ignition Point °F	627	690	741	750	782
Pour Point °F	-62	-50	-45	-40	-35
Copper Corrosion, 24 Hr	1a	1a	1a	1a	1a
Demulsibility, 130°F, 30 Min	40/40/0	40/40/0	40/40/0	40/40/0	40/40/0
Viscosity Index	110	115	118	120	125



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