Proprietary Additive

ALMASOL®

Solid • Extreme Heat Stability • AW & EP Protection

Almasol® is LE's proprietary solid film additive originally developed for use in the late 1950s. This soft, tan powder has been incorporated into many of LE's industrial lubricating oils and greases. The microscopic particles are so small it would take approximately 8,000 of them to cover the punctuation mark at the end of this sentence. So revolutionary in its development, a form of Almasol's dry film technology has been used on every manned U.S. space flight until the retirement of the space shuttle program.

Unlike molybdenum disulfide and other solids used in lubricants, Almasol will not build up on itself and adversely affect machine operation with close tolerances or create hard deposits that create housekeeping issues. Unlike graphite – a commonly used solid lubricant – Almasol maintains its lubricity even under vacuum conditions. That's why it functioned so well in space programs.

Beneficial Qualities

- ☑ **Deposits a sacrificial layer on metal surfaces**
- ☑ **Will not build up on itself**
- ☑ **Remains stable even in extreme heat conditions**
- ☑ **Reduces heat by minimizing friction**
- ☑ **Provides extreme pressure (EP) protection**
- ☑ **Provides anti-wear (AW) protection**

How It Works

Lubrication is accomplished by providing a lubricant film between two opposing metal surfaces. Under light to moderate load and sufficient speeds, lubricants of the proper viscosity provide the desired film strength. As load, speeds and temperatures increase and or decrease through operation the oil film alone can become insufficient to prevent galling, scoring, wear, friction and high temperatures as metal-to-metal contact occurs. This is where Almasol excels in protecting equipment.

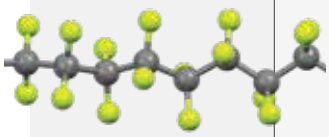
Think of Almasol particles as small uniform microscopic platelets. They form a single protective sacrificial layer over a metal's working surface because they have a natural affinity for metal, maintaining an even dispersion throughout the lubricant fluid. Almasol will not build up on itself because the particles are mutually repelled. When equipment is operating, Almasol particles will slide on each other to inhibit metal-to-metal contact. If a single particle is worn away, another particle takes it place, constantly protecting the metal surface.

Proprietary

Almasol additive technology is used exclusively in LE lubricants, helping our customers worldwide protect their equipment, and experience longer lubricant intervals, fewer part replacements and less downtime.

Comparison Data

Almasol® Outperforms Conventional Solid Additives

Solid Additive	Maximum Service Temperature	Load Carrying Capacity	Acid Resistance	Drawbacks When Used in Industrial Lubricants
Almasol® 	1,038°C (1,900°F)	400,000 psi (28,123 kgf/cm^2)	Inert	None
Molybdenum Disulfide  A	343°C (650°F)	400,000 psi (28,123 kgf/cm^2)	Some	Oxidizes in air above 343°C (650°F), forming abrasive molybdenum trioxide. Tendency to build up on itself, affecting machinery with close tolerances. Cannot tolerate hydrochloric and nitric acid, especially when heat, water and air are present.
Graphite  B	426°C (800°F)	80,000 psi (5,625 kgf/cm^2)	Some	Known to exhibit galvanic corrosion problems. Tendency to build up on itself, affecting machinery with close tolerances.
Fluorocarbon (PTFE)  C	260°C (500°F)	5,000 psi (352 kgf/cm^2)	Inert	No load-carrying capability. Tendency to build up on itself, affecting machinery with close tolerances.

A – Molly_Hill_molybdenite_Pryope, Wikimedia, CC BY-SA 3.0
B – Min_graphite_Daniel Schwen, Wikimedia, CC BY-SA 2.5
C – Perfluorodecyl-chain-from-xtal-Mercury-3D-balls_Ben Mills, Wikimedia

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