



# TECHNICAL DATA

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## #167 MOLY FULL SYNTHETIC GEAR LUBE SAE75W-140, ISO GRADES 150 TO 680

Moly Full Synthetic Gear Lube is a multipurpose thermally stable and durable extreme pressure synthetic gear lubricant that is specially formulated for use in all types of automotive and enclosed gear drives including worm gear drives.

Moly Full Synthetic Gear Lube is blended from the highest quality polyalphaolefin synthetic (PAO) base fluids available. These PAO base fluids provide the Moly Full Synthetic Gear Lube with the following advantages.

1. **Excellent Low Temperature Properties** - The PAO's low channeling and pour point allow Moly Full Synthetic Gear Lube to lubricate the bearings and gears at sub-zero temperatures the moment they start turning.
2. **Superior Oxidation Stability** - All oils, as they are increasingly exposed to high temperature operation undergo a process of oxidation; this results in the oil's thickening and a build up of acidic components. Because of the synthetic hydrocarbon's uniform molecular structure, the process of oxidation is greatly reduced.
3. **Excellent Resistance to Thermal Degradation at High Temperatures.**
4. **Excellent Hydrolytic Stability and Demulsibility Characteristics** - Since PAO's are non-polar, they absorb less water, especially in applications that are run under high humidity or high water conditions. They separate condensed water much faster and more completely, thus resulting in the water being easily removed from the system. These properties result in increased bearing and gear life, anti-wear protection, and improved rust and corrosion protection.
5. **High Viscosity Index** - This results in a minimum change in viscosity. The adequate viscosity for proper bearing and gear lubrication is provided regardless of temperature change.
6. **Excellent Stay in Grade Performance Without Addition of Viscosity Index Improver** The nature and the high viscosity index of the PAO base fluids in Moly Full Synthetic Gear Lube eliminates the use of viscosity index improvers. This results in Moly Pure Synthetic Gear Lube being completely shear stable in service. Moly Pure Synthetic Gear Lube will retain its excellent viscosity-temperature characteristics even under the most severe mechanical shearing that can be encountered.
7. **Increased Wear Protection and Longer Gear Life** - When conventional oils are cold, they thicken to the point where distribution of the oil to the bearings and gears is slow or totally stopped. At high operating temperatures conventional oils thin out to the point where there is little or no lubrication to the bearings and gears. PAO's, because of their high viscosity index and low temperature fluidity properties, allow Moly Full Synthetic Gear Lube the ability to lubricate bearings and gears even under the most severe temperature conditions.
8. **Compatibility With All Types of Seals.**

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Blended into these PAO base fluids is a non-corrosive additive package which provides the Moly Full Synthetic Gear Lube with exceptional extreme pressure properties to protect parts from excessive wear, prevent premature bearing fatigue and gear scoring, spalling and pitting. This additive package also provides the Moly Full Synthetic Gear Lube with excellent demulsibility characteristics, enhanced protection of components from rust and corrosion and enhanced protection of copper, brass and bronze components from corrosion in dry conditions in the presence of moisture. This non-corrosive property allows the Moly Full Synthetic Gear Lube to be suitable for use in wormgear applications.

Most gearing is designed to perform under hydrodynamic lubrication conditions. That is, a full fluid film must separate the metal surfaces of the gears during operation. However, during periods of cold start up or severe shock loads this film can be destroyed. Unless a boundary lubricant is present in the gear oil when this full fluid film is destroyed, wear can take place.

To prevent this wear Micron Moly<sup>®</sup>, a liquid soluble type of moly, is further blended into Moly Full Synthetic Gear Lube. This soluble moly provides the boundary lubrication needed by plating itself to the metal surfaces of the gears and bearings. This plating action forms a long lasting solid lubricant film on the metal surfaces of the gears. This moly film will withstand pressures up to 500,000 pounds per square inch, thus reducing wear and extending equipment life.

Moly Full Synthetic Gear Lube, because of the use of PAO base fluids and the addition of micron moly<sup>®</sup>, not only minimizes cold welding but also allows for an increase in gear efficiency. This in turn results in lessened starting loads, a decrease in peak power demand, increased fuel economy (automotive applications), and a reduction in gear box noise and gear box operating temperatures.

Moly Full Synthetic Gear Lube meets and exceeds API Service Classifications GL-5, MT-1, PG-2; Military Specification MIL-PRF-2105E, SAE 2360, Mack GO-H-S, Clark MS-8 Rev. 1, Ford M2C-119A, MC2108C, M2C158A General Motors Specifications 9985476, 9985044, Chrysler, John Deere J11D, Komatsu Dresser B22-0003, B22-0005, Rockwell Standard 0-76L, David Brown ET-19, Terex EMS 19003, VME America's EEMS S19003F, EEMS19107, Eaton's Axle Lubricant Specifications, White Motor MS0016, Volvo, Volkswagen, US Steel 224, David Brown S1.53101 Type E, AGMA 250.04, AGMA 9005, AGMA 251.2, DIN 51517 Part 3 (CLP) and Cincinnati Millicron P.74.

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**TYPICAL PROPERTIES**

SAE Grade	75W-140	150	100	150	320	460	680
ISO Grade	220	4EP	3EP	4EP	6EP	7EP	8EP
AGMA Grade	5EP	155.89-169.00	92.19-99.80	155.89-169.00	345.01-374.04	462.67-506.21	670.85-689.57
Viscosity 40°C cSt (ASTM D-445)	193.00-220	19.47-20.7	13.07-13.94	19.47-20.7	35.93-37.94	43.06-45.88	55.87-58.12
Viscosity 100°C cSt (ASTM D-445)	2500-30.50	144	141	144	150	145	146
Viscosity Index (ASTM D-2270)	178						
Brookfield Viscosity (ASTM D-2983)							
@ -15°F/-26°C, cP	25,200						
@ -10°F/-40°C, cP	140,000						
Flash Point °F/C (ASTM D-92)*	489°/254°	496°/258°	484°/251°	496°/258°	514°/268°	513°/267°	529°/276.11°
Fire Point °F/C (ASTM D-97)*	550°/288°	530°/277°	520°/271°	530°/277°	550°/290°	550°/288°	570°/298.89°
Pour Point °F/C (ASTM D-92)	-50°/-46°	-50°/-46°	-55°/-48°	-50°/-46°	-45°/-43°	-30°/-34°	-25°/-31.67°
Rust Test (ASTM D-665)	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Procedure A (Distilled Water)	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Procedure B (Salt Water)	1a	1a	1a	1a	1a	1a	1a
Copper Strip Corrosion Test (ASTM D-130)	400	400	400	400	400	400	400
Four Ball EP Test (ASTM D-2783)	59.10	59.10	58.25	59.10	67.91	69.5	67.91
Weld Point, kg	60						
Load Wear Index, kg							
Four Ball Wear Test (ASTM D-4172)							
(1 hr/40 kg/130°F)							
Scar Diameter, mm	0.35	0.4	0.4	0.4	0.35	0.28	0.28
FZG (ASTM D-5182, A/8.3/90)	13th	13th	13th	13th	13th	13th	13th
Failure Stage	70	70	65	70	70	70	70
Timken EP (ASTM D-2782)	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Ok Load, lbs.							
Fatex EP Continuous Load Procedure A (ASTM D-3233)							
Failure Load, lbs.							
Demulsibility (ASTM D-2711)	85	85	85	85	85	85	85
Free Water, ml	0.5	0.5	0.5	0.5	0.5	0.5	0.5
% Water in oil	0	0	0	0	0	0	0
Emulsion							
Oxidation Test (ASTM D-2893)	2.0%	1.5%	2.0%	1.5%	1.5%	1.5%	1.5%
Viscosity Increase after 312 hrs. @ 203°F/95°C	20	20	20	20	20	20	20
L-60-1 Thermal Oxidation Test (ASTM D-5704)							
% Viscosity Increase	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Foam Test (ASTM D-892)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Sequence I	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Sequence II	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Sequence III	0/0	0/0	0/0	0/0	0/0	0/0	0/0

\* Flash Point & Fire Point of Base Oil.

Packaging: #167 Moly Pure Synthetic Gear Lube is available in (net weights) 420 lb.- Drums, 114 lb.-kegs. And 38lb pails