



Product Data

## Molub-Alloy GM™ 969/320

Leak Resistant Gear Compound

### Description

Castrol Molub-Alloy™ GM 969/320 (previously called Molub-Alloy 969/320) Leak Resistant Gear Compounds are manufactured by adding a small amount of a synthetic thickener to standard ISO grade gear oils. The small addition has a moderate thickening effect on the oils, especially in the container, or while not in motion. During the stirring action of gears and bearings, however, 969 exhibits the rapid flow and film-forming characteristics similar to the original base gear oils.

### Application

Molub-Alloy GM 969 Leak Resistant Gear Compounds were originally developed for service in heavy duty earth moving equipment such as shovels and draglines. Surging stress and vibration on these machines inevitably produces some degree of leakage from gear cases, excessive leakage at shaft seals is not uncommon on hoist, drag, propel, and especially swing gear cases of large draglines and swing cases of shovels. Often the tramp oil will contaminate the heavy gear compounds necessary to lubricate the exposed open gear drives. The use of 969 Gear Compounds can also be extended to control leaks in gear sets in industrial and marine applications. Molub-Alloy GM 969 Leak Resistant Gear Compounds are specially formulated to help control leaks in gear cases.

The synthetic thickener forms a mat-like matrix at the points of leakage to minimise the flow of oil. Leakage from gear cases has traditionally been controlled by the substitution of a grease for the lubricating oil. This is unsatisfactory because greases can channel, and are poor at carrying heat away from the meshing gears and dissipating from the gear case. The moderate thickening of Molub-Alloy GM 969 Leak Resistant Gear Compounds are not the characteristic that helps to control leaks at cracks and seals, it is the nature of the synthetic thickener to link or gel to bridge the opening with a restricting consistency. Other than this restricting action at small openings, Molub-Alloy GM 969 Leak Resistant Gear Compounds act very much like the original base gear oil in service.

Molub-Alloy 969 Leak Resistant Gear Compounds were developed using base oil viscosities of ISO standard grades. Currently we offer a leak resistant gear oil with the base oil ISO viscosity grade of 320.

## Typical Characteristics

Name	Test Method	Units	Molub-Alloy GM 969/320
Consistency	-	-	Semi-Fluid
Appearance	Visual	-	Fibrous
Specific Gravity @ 60°C / 140°F	ASTM D1298 / ISO 3675	-	0.9
Apparent Viscosity, Brookfield @ 72°F, Spindle 6, 20rpm	ASTM D2983 / ISO 9262	cP	18,750
Flash Point - open cup method	ASTM D92 / ISO 2592	°C/°F	229 / 445
Fire Point,	ASTM D 92	°C	260
Pour Point	ASTM D 97	°C	N/A
Four Ball Wear Test, Scar Diameter (40kg, 75°C/ 167°F, 1800rpm, 1hr)	ASTM D2783	mm	0.45
Four Ball Weld Load test - Load Wear Index	ASTM D2783	kgf	44
Four Ball Weld Load test - Weld Point	ASTM D2783	kgf	400
Antiwear test - Falex Pin & V-Block	ASTM D2670	Teeth Wear (number)	3
Falex EP Test	-	psi	1750
Foam Tendency (a Tribol Test using a Waring Blender, subjects lubricant to max shear for 5 mins), measures time to no foam	Tribol Test	-	No foaming
Oxidation Stability @ 95°C, % viscosity increase	ASTM D 2893	-	+2.25
Molub-Alloy Solids Grade Classification	-	-	Fluid Lubricant
Base Oil Properties ISO Viscosity Grade	ASTM D 2422	-	320
Base Oil AGMA Lubricant Number	-	-	6EP
Base Oil Viscosity @ 100°C	ASTM D 445, D 1261	cSt	25
Base Oil SAE Viscosity Classification	-	-	140
Base Oil Viscosity Index	-	-	100
Base Oil Pour Point	ASTM D97 / ISO 3016	°C/°F	--15 / +5
Base Oil Rust Test , Procedures A and B	ASTM D 665	-	Pass
Base Oil Copper Corrosion 3hrs @ 100°C	ASTM D 130	-	1b
Base Oil FZG Test (A/166/140), Load Stages Passed	-	-	12+
Base Oil FZG Test (A/83/90) Load Stages Passed	-	-	12+
SRV (400N, 20°C, Amplitude 1mm, 50Hz), coefficient of friction	-	μ	0.08
Base Oil Timken EP Test (ASTM D 2782) OK Load	-	kg/lb	32 / 70

\* Molub-Alloy GM 969 does not readily pour in ASTM D 97 container without agitation. Operation in service is restricted mainly by the pour point of the base fluid.  
Subject to usual manufacturing tolerances.

## Additional Information

### Important Restrictions

Molub-Alloy GM 969 Leak Resistant Gear Compounds are not for use in units that include a central lubricating system as they will not pump like an oil or nor flow through small lines. 969 will plug filters.

Molub-Alloy GM 969 Leak Resistant Gear Compounds should not be used in gearcases where shaft bearings are lubricated by oil flowing through small lines or orifices as they will seal small openings or seriously restrict oil flow. On the other hand, where bearings are submerged, and oil flow is not unidirectional, flow is not restricted.

Molub-Alloy GM 969 Leak Resistant Gear Compounds are designed for use in gearboxes where gear oil makeup volumes are unacceptable due to worn shaft seals or other minor causes of leakage. The 969 Compounds should be used as gearbox fill only until repair of the leaking condition can be conveniently performed.

Molub-Alloy GM 969 Leak Resistant Gear Compounds are not designed to prevent leakage due to gross mechanical defects such as worn bearings and damage causing shafts to experience excessive play which results in excessive lubricant makeup.

### Notes

Molub-Alloy GM 969 Leak Resistant Gear Compounds may be metered through grease pumping systems, but would be expected to cavitate in oil circulating pumps.

Molub-Alloy GM 969 Leak Resistant Gear Compounds will flow readily when agitated but should not be expected to flow by gravity or feed through small lines. Molub-Alloy GM 969 Leak Resistant Gear Compounds must be stirred vigorously before use.

Since filters must be removed when using Molub-Alloy GM 969 Leak Resistant Gear Compounds, routine oil sampling is strongly recommended.

**This product was previously called Molub-Alloy 969/320. The name was changed in 2015.**

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