



TRIBOL® 1100 GEAR OILS (WITH TGOA)

Product Data Sheet

Tribol 1100 Gear Oils with the TGOA additive system represent a significant advancement in gear oil technology. Developed for service in enclosed gear drives, journals, and antifriction bearings, Tribol 1100 Gear Oils are typically used where heavy and shock load conditions prevail.

DESCRIPTION

Tribol 1100 Gear Oils are manufactured from the highest quality petroleum base oils. Blended into this oil is the latest development in the field of surface improving additives designated TGOA. TGOA is an oil soluble additive package designed to reduce friction while providing surface protection and improvement. The TGOA additive package offers superior performance because of its unique action on frictional surfaces.

TGOA works by establishing a highly protective metal rich lubricating film. This film is formed by the reaction of TGOA additives due to frictional heat and the catalytic action of metallic surfaces. The results are a smoothing of surface roughness without creating abrasion. Therefore, surface roughnesses are reduced without the usual loss of surface material.

The results of the TGOA process can be compared with a rolling process in the micro-range. The surface roughnesses are gradually leveled and smoothed. Through this smoothing action, the actual load-bearing area is enlarged with the loads being distributed over increasing areas. Therefore the actual load per unit of working area decreases.

If surface roughness peaks redevelop because of shock loads or stop-and-go operation, the TGOA additive package is automatically reactivated. Surface roughnesses are again smoothed and lubrication optimized.

Tribol 1100's have passed the harsh Cincinnati Milacron Thermal Stability Test. This test evaluates copper and steel corrosion and oxidation stability. The Tribol 1100 approvals are: P 74, P 59, and P 35 for the ISO 220, 320, and 460 grades respectively.

APPLICATIONS

Typical applications are spur, helical, herringbone, bevel, and planetary gears. They are also used in geared couplings and where fine filtration is required.

Tribol 1100 Gear Oils may be used in antifriction and journal bearings and applied by oil mist systems.

Tribol 1100 Gear Oils with the TGOA additive package are most effective when used from the initial fill of the equipment. It has also proven to be effective in applications where surfaces have previously been damaged in service.

ADVANTAGES

Because of TGOA's highly protective lubricating film the following advantages can be obtained:

- Reduced friction
- Reduced wear
- Lower operating temperature
- Lower noise level
- Reduced pitting if not caused by design or heavy overloading

As a result of the TGOA advantage the following benefits can be derived:

- Longer gear and bearing life
- Reduced maintenance costs
- Greater productivity
- Higher profitability

NOTES

Tribol 1100 Gear Oils are compatible with other petroleum gear oils. This means that traces of previous oil remaining in the gearcase after draining should not pose problems. However, the beneficial effects of the TGOA additives are reduced when 1100 Gear Oils are mixed with other oils.

A thorough cleaning of the gearbox is highly recommended to achieve the maximum benefits of Tribol 1100 Gear Oils.

For specific terms, conditions, warranty, and availability, refer to Castrol Performance Lubricants' Price List in effect at time of purchase.

Please See Reverse Side for Typical Properties.

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TRIBOL 1100 12-99 –R13
Formerly PDS 2610-13 12/99
Molub-Alloy® Optimol® Tribol®

TRIBOL 1100 GEAR OILS (WITH TGOA®)

TYPICAL PROPERTIES **1100/68** **1100/100** **1100/150** **1100/220** **1100/320** **1100/460** **1100/680** **1100/1000** **1100/1500**

ISO Viscosity Grade, ASTM D 2422	68	100	150	220	320	460	680	1000	1500
AGMA Lubricant Number	2EP	3EP	4EP	5EP	6EP	7EP	8EP	8AEP	--
Food Grade	H2	H2	H2	H2	H2	H2	H2	H2	--
Density, DIN 51757, 15°C, g/ml	0.893	0.896	0.901	0.905	0.914	0.916	0.929	0.942	0.947
API Gravity, ASTM D 1298, @ 15.6°C	27.1	26.5	25.5	24.9	23.4	23.0	20.8	18.8	18.0
Viscosity, ASTM D 445, D 2161:									
@ 40°C, mm ² /s (cSt)	68	100	150	220	320	460	680	1000	1500
@ 100°C, mm ² /s (cSt)	9.0	11.6	15.3	19.7	25.0	30.6	38.3	52.5	64.8
@ 100°F, cSt/SUS	76/352	112/519	170/788	250/1158	367/1700	532/2464	794/3677	1170/5420	1775/8220
@ 210°F, cSt/SUS	9.2/56	11.9/66	15.8/81	20.3/100	25.8/124	31.7/150	39.7/187	54.5/254	67.5/315
Viscosity Index, ASTM D 2270	106	104	103	102	102	96	93	100	96
Flash Point, ASTM D 92, COC, °C/°F	224/435	229/445	238/460	238/460	238/460	243/470	243/470	243/470	243/470
Fire Point, ASTM D 92, COC, °C/°F	249/480	249/480	249/480	263/505	263/505	263/505	263/505	263/505	263/505
Pour Point, ASTM D 97, °C/°F	-26/-15	-23/-10	-23/-10	-20/-5	-18/0	-15/+5	-12/+10	-10/+15	-10/+15
Rust Test, ASTM D 665:	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Procedure A (Distilled Water)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Procedure B (Synthetic Sea Water)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Copper Corrosion Test, ASTM D 130	1a	1a	1a	1a	1a	1a	1a	1a	1a
3 hrs, 100°C									
Timken Extreme Pressure Test	27/60	32/70	32/70	34/75	34/75	34/75	34/75	34/75	32/70
ASTM D 2782									
OK Value, kg/lbs	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Four Ball Wear Test	5	5	5	5	5	5	5	5	5
(40 kg, 75°C/167°F, 1800 rpm, 1 hr)									
Scar Diameter, mm									
Falex Wear Test, ASTM D 2670									
Wear Teeth									
SRV Test, 50°C 300N									
2 hr DIN E51843-02-5									
Amplitude 1 mm, Frequency 50Hz									
(μ = coefficient of friction)									

----- μ = 0.07 - 0.09 -----

FZG Test, DIN 51354 (A/8.3/90) IP 334 Visual Inspection >12 >12 >12 >12 >14 >12 >12 >12 >12

-- GEAR TOOTH FLANKS LIKE NEW --