Product Data Sheet

Optigear BM Range

High Performance Gear Oils

Description

Castrol Optigear™ BM is a range of high-performance extreme pressure gear oils, developed to tackle wear-related problems in heavily loaded industrial gears and bearings.
Optigear BM is formulated with Castrol's Microflux Trans (MFT) Plastic Deformation (PD) additive. MFT PD helps improve performance when operating temperature and loads reach a certain level of activation energy, by enabling the micro-smoothing of surface roughness without increasing wear. The smoothed surface delivers optimum wear protection and an extremely low coefficient of friction, especially in applications which experience extreme pressure, shock loads, vibrations or low speeds. MFT PD helps to protect against scuffing and shock loading, while maintaining a high load carrying capacity, and can help prevent the progression of micro-pitting in pre-damaged gears.
Specific grades within the Optigear BM range meet the requirements of DIN 51517 part 3 CLP and the requirements of a wide range of industrial bodies and equipment manufacturers. Oils are formulated with detergent additives.
Optigear BM 68 and BM 220 are also classified as CGLP oils (DIN 51502).

Application

Optigear BM is suitable for gears and bearings operating under normal to extreme conditions.
Extreme pressure additives make Optigear BM suitable where there is a need to maintain high load carrying capacity while protecting against scuffing and shock loading.
Optigear BM 68 and BM 220 can also be used as slideway oils subject to a metalworking fluid compatibility check.

Advantages

Compared to conventional non-PD oils, Castrol Optigear BM can deliver the following advantages:

- Tests have shown a reduction in the coefficient of friction of up to 60% over conventional oils without PD technology[1] which can deliver energy savings, lower lubricant and component temperatures and improve operational efficiency
- In laboratory tests Castrol PD additives were shown to prevent the progression of micro-pitting in pre-damaged gears. Non-PD oils used in pre-damaged gears showed existing wear levels increased up to three times[2]
- Smoothing existing gear damage reduces the cost of repairs and replacements and improves operating efficiency by increasing equipment reliability
- Friction, heat and vibration are reduced
- Oil with Castrol PD additives provides superior protection with wear levels of less than half those observed in tests with conventional non-PD oil[3] to help extend planned gear and bearing life
- Extended lubricant service life and relubrication intervals can help to reduce costs and waste oil disposal
- Full load operation is achieved in a short time, virtually eliminating the running-in period
- Optigear BM 68 and BM 220 CGLP slideway oils. (Subject to metalworking fluid compatibility check).

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[1]In-house testing on SRV test rig; steel ball against steel plate.
[2]In-house modified FZG micro-pitting test.
[3]Independent MPR testing carried out by Powertrib showed weight loss was less than half that recorded through use of a conventional non-PD oil.

Typical Characteristics

Name	Method	Units	68	100	150	220	320	460	680	1000	1500
Colour	visual	-	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
ISO Viscosity Group	-	-	68	100	150	220	320	460	680	1000	1500
Density @ 15°C	ISO 12185 / ASTM D4052	kg/m³	890	895	900	905	910	910	920	930	930
Kinematic Viscosity @ 40°C	ISO 3104 / ASTM D445	mm²/s	68	100	150	220	320	460	680	1000	1500
Kinematic Viscosity @ 100°C	ISO 3104 / ASTM D445	mm²/s	9.1	11.7	15.0	19.4	24.9	31.8	38.3	47.4	64.2
Viscosity Index	ISO 2909 / ASTM D2270	-	110	105	100	100	100	100	93	90	95
Flash Point - open cup method	ISO 2592 / ASTM D92	°C	220	220	225	230	235	240	245	250	235
Pour Point	ISO 3016 / ASTM D97	°C	-24	-21	-18	-15	-15	-12	-9	-9	-3
Copper corrosion (3 hrs @ 100°C)	ISO 2160 / ASTM D130	Rating	1	1	1	1	1	1	1	1	1
Rust test - distilled water (24 hrs)	ISO 7120 / ASTM D665A	-	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Rust test - synthetic seawater (24 hrs)	ISO 7120 / ASTM D665B	-	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
FZG Gear Scuffing test - A/8.3/90	ISO 14635-1	Failure Load Stage	12	12	>12	>12*	>12	>12	>12*	>12*	>12*
FE8 Bearing Wear Test (F.562831.01-7.5/80-80)	DIN 51819-3	Roller Wear, mg	<5	<5*	<5	<5*	<5	<5*	<5*	<5*	<5*
FZG Micropitting Test @ 60°C	FVA 54-7	Failure Load Stage Micropitting Rating					>10 high				
FZG Micropitting Test @ 90°C	FVA 54-7	Failure Load Stage Micropitting Rating			>10 high		>10 high				

* Data read across from lower viscosity grade. Subject to usual manufacturing tolerances.

User Advice

- Miscible and compatible with most mineral oil based gear oils. However, maximum performance is only guaranteed if not mixed with any other product.
- Compatible with non-ferrous metals.
- Compatible with most paints and conventional sealing materials.
- Mechanical cleaning with all known filtering installations and separators possible.

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