

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 technology¹ 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 times²
- 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 oil³ 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).

¹In-house testing on SRV test rig; steel ball against steel plate.

²In-house modified FZG micro-pitting test.

³Independent 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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