



Product Data

## Optigear Synthetic RO 220

High performance gear oil

### Description

Castrol Optigear™ Synthetic RO 220 high-performance synthetic oil, developed especially for gears used in rail traffic and mechanical engineering applications (such as in Robots). The properties of Optigear Synthetic RO mean it is especially suited for hot climates.

Optigear Synthetic RO 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.

### Application

Optigear Synthetic RO 220 can be used for all types of spur gear teeth, also under difficult load conditions. Bevel gear units, including those with a large offset (hypoid) and heavy alternating loads.

All types of roller bearings, with heavy loads and low and high temperatures. Can be used in a very broad range of temperatures, especially in hot climates.

Dip lubrication at high numbers of revolutions, as well as injection and oil mist lubrication.

Filtering (mechanical) does not result in any additive loss.

Not for synchronised gears or limited slip differentials due to low friction coefficients.

### Advantages

- High pressure absorption and excellent wear protection<sup>1</sup>
- Safe bearing lubrication in high- and low-temperature ranges
- High seizure load-bearing capacity<sup>1</sup>
- Above-average application times – even under difficult conditions<sup>1</sup>
- Reduction of friction coefficient and operating temperature<sup>1</sup>
- Good corrosion protection<sup>1</sup>
- Long service life for gears<sup>1</sup>
- Exceeds requirements regarding wear protection in line with DIN 51517, part 3

<sup>1</sup>When compared to conventional gear oils.

## Typical Characteristics

| Name                                                | Method                 | Units              | R0 220           |
|-----------------------------------------------------|------------------------|--------------------|------------------|
| Appearance                                          | Visual                 | -                  | Blue green fluid |
| Density @ 15°C / 59°F                               | ISO 12185 / ASTM D4052 | kg/m <sup>3</sup>  | 875              |
| Kinematic Viscosity @ 40°C / 104°F                  | ISO 3104 / ASTM D445   | mm <sup>2</sup> /s | 220              |
| Kinematic Viscosity @ 100°C / 212°F                 | ISO 3104 / ASTM D445   | mm <sup>2</sup> /s | 23.8             |
| Viscosity Index                                     | ISO 2909 / ASTM D2270  | -                  | 134              |
| Pour Point                                          | ISO 3016 / ASTM D97    | °C/°F              | -45 / -49        |
| Rust test - distilled water (24 hrs)                | ISO 7120 / ASTM D665A  | Rating             | Pass             |
| Copper corrosion (24 hrs@100°C/212°F)               | ISO 2160 / ASTM D130   | Rating             | Pass             |
| Flash Point - open cup method                       | ISO 2592 / ASTM D92    | °C/°F              | 240 / 464        |
| Water Separation @ 82°C / 180°F (40/37/3)           | ISO 6614 / ASTM D1401  | minutes            | <30              |
| Foam Sequence II - tendency / stability             | ISO 6247 / ASTM D892   | ml / ml            | 50 / 0           |
| FZG Gear Scuffing test - A/8.3/90                   | ISO 14635-1            | Failure Load Stage | >14              |
| FZG Gear Scuffing test - A/16.6/90                  | ISO 14635-1            | Failure Load Stage | >12              |
| FZG Sprungtest (Jump test) - S-A10/16.6R/90         | ASTM L42               | Failure Load Stage | >9<br>(GL5 Pass) |
| SRV Friction and Wear test- Coefficient of friction | ASTM D6425 / DIN 51834 | -                  | 0.09             |

Subject to usual manufacturing tolerances.

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