



## Hyspin™ ZZ Superclean Range

Anti-wear hydraulic oil

### Description

The Castrol Hyspin™ ZZ Superclean hydraulic oil range of lubricants is based on a carefully selected ashless (zinc free) additive system designed to meet and exceed the most exacting performance standards. Filtered to ISO 4406 - 16/14/11 (equivalent to NAS 5), to ensure high cleanliness after storage and delivery.

### Application

The Hyspin ZZ Superclean range is designed for applications requiring anti-wear and superior oxidation performance and is particularly suitable for hydraulic systems using vane and piston pumps where elevated operating temperatures are encountered. They are formulated for use in severely stressed systems in which high levels of anti-wear performance and/or ultra fine filtration are required. They have been proven to be resistant to the effects of 'dieseling' in highly stressed systems such as plastic injection moulding and fatigue testing equipment where the application leads to rapid breakdown of more conventional products. The range is fully compatible with elastomer materials commonly used for static and dynamic seals, such as nitrile, silicone and fluorinated (e.g. Viton) polymers.

Hyspin ZZ Superclean is classified as follows:

- DIN 51502 classification - HLP
- ISO 6743/4 - Hydraulic Oils Type HM

Hyspin ZZ Superclean grades meet the requirements (for appropriate viscosity grade) of:

- Parker Hannifin (Denison) HF0, HF1 & HF2
- Eaton E-FDGN-TB002-E
- DIN 51524 Part 2
- Fives Cincinnati P68, P69 & P70
- ASTM D6158 HM
- ISO 11158 HM
- US Steel 126
- GB 11118.1 L-HM (General and High Pressure)

### Advantages

- Good thermal and oxidative stability provides reliable performance and extended oil life in severe applications. Minimal deposit formation gives a cleaner system and reduced frequency of filter changes.
- Excellent anti-wear performance provides extended wear protection for hydraulic pumps. Reduced down time due to unscheduled maintenance and savings from replacement part costs.
- Excellent filterability characteristic (including in the presence of water) enables cost savings to be made from increased filter life and reduced maintenance.
- Excellent water separation and hydrolytic stability means reduced down time through prolonged lubricant life and increased equipment reliability.

# Typical Characteristics

| Name                                     | Method                 | Units              | Hyspin ZZ 46     | Hyspin ZZ 68     |
|------------------------------------------|------------------------|--------------------|------------------|------------------|
| ISO Viscosity Grade                      | -                      | -                  | 46               | 68               |
| Appearance                               | Visual                 | -                  | Clear and bright | Clear and bright |
| Density @ 15°C                           | ISO 12185 / ASTM D4052 | kg/m <sup>3</sup>  | 875              | 877              |
| Kinematic Viscosity @ 40°C               | ISO 3104 / ASTM D445   | mm <sup>2</sup> /s | 46               | 68               |
| Kinematic Viscosity @ 100°C              | ISO 3104 / ASTM D445   | mm <sup>2</sup> /s | 6.7              | 8.6              |
| Viscosity Index                          | ISO 2909 / ASTM D2270  | -                  | >95              | >95              |
| Pour Point                               | ISO 3016 / ASTM D97    | °C                 | -21              | -21              |
| Flash Point - open cup method            | ISO 2719 / ASTM D93    | °C                 | 215              | 225              |
| Flash Point - closed cup method          | ISO 2719 / ASTM D93    | °C                 | 200              | 220              |
| Foam Sequence I tendency / stability     | ISO 6247 / ASTM D892   | ml / ml            | 20/0             | 20/0             |
| Water Separation @ 54°C (40/37/3)        | ISO 6614 / ASTM D1401  | Minutes            | 15               | 15               |
| Air Release @ 50°C                       | ISO 9120 / ASTM D3427  | Minutes            | 8                | 8                |
| Rust Test (24 hrs distilled water)       | ISO 7120 / ASTM D665A  | -                  | Pass             | Pass             |
| Rust Test (24 hrs synthetic sea water)   | ISO 7120 / ASTM D665B  | -                  | Pass             | Pass             |
| Copper Corrosion, 3hrs @ 100C            | ISO 2160 / ASTM D130   | Rating             | 1A               | 1A               |
| FZG Gear Scuffing test ( A/8.3/90 )      | ISO 14635-1            | Failure Load Stage | 12               | 12               |
| Oxidation Stability - TOST               | ISO 4263-1 / ASTM D943 | Hours              | >2000            | >2000            |
| Cleanliness Class (at the filling point) | ISO 4406               | Rating             | 16/14/11         | 16/14/11         |

Subject to usual manufacturing tolerances.

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