



Rando® HD

Premium Anti-Wear Hydraulic Fluid

Product Data Sheet

Customer benefits

Longer service life

The use of Group II base stocks helps resist oil thickening and deposit formation in service, minimizing the possibility of an unscheduled change of hydraulic fluid. Oxidation test life is higher than solvent extracted hydraulic oil products.

Protects equipment

Robust anti-wear additive package minimizes wear by protecting surfaces when load causes breakdown of the lubricant film.

Minimized downtime

Rust and oxidation inhibitors combined with premium Group II base oils help to prevent the production of abrasive particles from rust formation, and deposits, varnishes and sludges from oil breakdown, which can damage equipment surfaces and seals, and block filters prematurely.

Smooth operation

Good hydrolytic stability and water separation characteristics promote excellent filterability in the presence of water contamination. Good anti-foam and air release properties help ensure smooth operation and system efficiency.

Applications

- Industrial hydraulic systems
- Hydraulics of mobile and construction equipment where a water separating oil is required
- Hydraulic systems with vane, gear or piston pumps
- Plastic injection molding machines
- Machine tools
- Enclosed gear systems (dependant on load)
- Industrial circulating systems

Product features:

Rando® HD oils are formulated with premium Group II base oils and anti-wear additives, and are designed to give robust protection to hydraulic pumps in mobile and stationary systems.

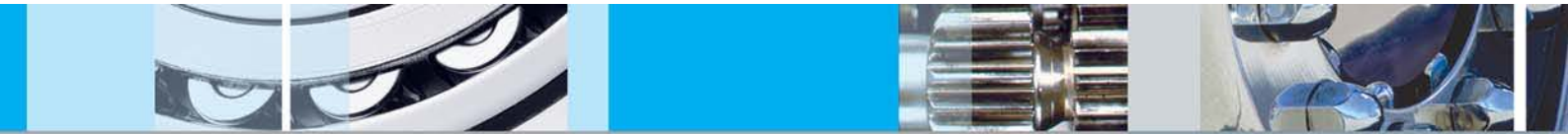
Typical key properties

| RANDO® HD | | | | |
|-----------------------------------------|--------|--------|--------|--------|
| ISO Grade | 22 | 32 | 46 | 68 |
| Product Code | 520209 | 520210 | 520211 | 520212 |
| Air Release @ 50°C, mins | 1.1 | 1.1 | 2.0 | 3.5 |
| Flash Point, °C | 190 | 216 | 238 | 240 |
| FZG, Fail Load Stage | - | 12 | 12 | 12 |
| Pour Point, °C | -36 | -33 | -33 | -30 |
| Oxidation Stability(TOST),hrs | | 5000+ | 4500+ | 4500+ |
| Viscosity, mm ² /s @ 40°C | 21.0 | 30.5 | 44.0 | 65.0 |
| mm ² /s @ 100°C | 4.3 | 5.4 | 6.8 | 8.9 |
| Viscosity Index | 110 | 110 | 110 | 110 |

| RANDO® HD | | | | |
|-----------------------------------------|--------|--------|--------|--------|
| ISO Grade | 100 | 150 | 220 | 320 |
| Product Code | 520213 | 520214 | 520215 | 520220 |
| Air Release @ 50°C, mins | 12 | 15 | - | - |
| Flash Point, °C | 240 | 250 | 274 | 277 |
| FZG, Fail Load Stage | 12 | 12 | 12 | 12 |
| Pour Point, °C | -21 | -15 | -12 | -12 |
| Oxidation Stability(TOST),hrs | | | | |
| Viscosity, mm ² /s @ 40°C | 95.5 | 143 | 220 | 304 |
| mm ² /s @ 100°C | 10.8 | 14.3 | 19 | 23.4 |
| Viscosity Index | 97 | 97 | 97 | 96 |

ENVIRONMENT, HEALTH and SAFETY

Information is available on this product in the Material Safety Data Sheet (MSDS) and Customer Safety Guide. Customers are encouraged to review this information, follow precautions and comply with laws and regulations concerning product use and disposal. To obtain a MSDS for this product, visit: www.Caltex.com



Performance standards

Rando HD oils are approved against:

- Parker Hannifin (Denison Hydraulics) HF-0 (ISO 32, 46, 68)
- Eaton Vickers I-286-S [industrial applications], M 2950-S [mobile applications] (ISO 32, 46, 68)
- David Brown Industrial Gears 0A (ISO 32), 1A (ISO 46), 2A (ISO 68), 3A (ISO 100), 4A (ISO 150)

Rando HD oils are suitable for use where oils meeting Cincinnati Machine P-68 (ISO 32), P-69 (ISO 68) and P-70 (ISO 46) are required.

Rando HD oils also meet the requirements of various industry standards:

- Bosch Rexroth former RE 90 220 (ISO 32, 46, 68)
- ISO 6743:1999 Part 4, HM fluid
- ISO 11158:2009, HM (ISO 22, 32, 46, 68, 100, 150)
- DIN 51502:1990, HLP fluid
- DIN 51524:2006-04 Part 2, HLP (ISO 22, 32, 46, 68, 100)

This bulletin was prepared in good faith from the best information available at the time of issue. While the values and characteristics are considered representative, some variation, not affecting performance, can be expected. It is the responsibility of the user to ensure that the products are used in the applications for which they are intended.

Produced by:
Chevron Global Lubricants
– Asia Pacific