



# Rando® HD

## Premium Anti-Wear Hydraulic Oil

Product Data Sheet



### Customer benefits

#### Protects equipment

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

#### Minimizes downtime

Rust and oxidation inhibitors 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.

#### Longer oil service life

The use of premium 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.

### 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 (dependent on load)
- Industrial circulating systems

### Product features:

- **Rando HD** are formulated with premium base oils and robust additives to give required protection to hydraulic pumps in mobile and stationary systems. Rando HD help ensure good film strength between metal surfaces and is further enhanced by antiwear additive protection
- **Rando HD** expected to deliver better oil service life with its premium base oil quality used in formulation.



## Performance standards

Rando HD are approved against:

- Parker Hannifin (Denison Hydraulics) HF-0 (ISO 32, 46, 68)
- Eaton Vickers I-286-S [industrial applications], M2950-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), 5A (ISO 220)

Rando HD oils meet the requirements of various industry standards:

- Bosch Rexroth former specification RE 90220 (ISO 32, 46, 68)
- DIN 51502:1990, HLP fluid (ISO 32, 46, 68, 100)
- DIN 51524:2006-04 Part 2, HLP (ISO 32, 46, 68, 100)
- Cincinnati Machine P-68 (ISO 32), P-69 (ISO 68) and P-70 (ISO 46)
- ISO 6743:1999 Part 4, HM fluid
- ISO 11158:2009, HM
- SAE MS1004 HM (ISO 32, 46, 68, 100)
- US Steel 126 and 127 (ISO 32, 46, 68)

## Typical key properties

RANDO® HD				
ISO Viscosity Grade	32	46	68	100
Product Code	520210	520211	520212	520213
Kinematic Viscosity, mm <sup>2</sup> /s @ 100°C	5.4	6.8	8.9	10.8
mm <sup>2</sup> /s @ 40°C	30.5	44	65	95.5
Viscosity Index	110	110	110	97
Flash Point, °C	216	238	240	240
Pour Point, °C	-33	-33	-30	-21
FZG Fail Load Stage	12	12	12	12
Air Release at 50°C, min	1.1	2	3.5	12
Oxidation Stability (TOST)	>5000	>4500	>4500	>2000
RANDO® HD				
ISO Viscosity Grade	150	220	320	
Product Code	520214	520215	520220	
Kinematic Viscosity, mm <sup>2</sup> /s @ 100°C	14.3	19.0	23.4	
mm <sup>2</sup> /s @ 40°C	143	220	304	
Viscosity Index	97	97	96	
Flash Point, °C	250	274	277	
Pour Point, °C	-15	-12	-12	
FZG Fail Load Stage	12	12	12	
Air Release at 50°C, min	15	-	-	
Oxidation Stability (TOST)	>1500	>1000	>1000	

The information given in the typical data does not constitute a specification but is an indication based on current production and can be affected by allowable production tolerances. The right to make modifications is reserved. This supersedes all previous editions and information contained in them.

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### 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](http://www.caltex.com)

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