



# Rando<sup>®</sup> HDZ

## Proven performance multi-viscosity anti-wear hydraulic oil

### Product description

Rando HDZ is a proven performance multi-viscosity anti-wear hydraulic fluid designed to offer robust protection at 1000 pounds per square inch (PSI) where surge pressures may increase metal-to-metal contact and wear, by effectively plating out metal surfaces in vane-, piston-, and gear-type pumps.

Rando HDZ is formulated with premium Group II base oil technology in combination with reliable additives to offer corrosion, oxidation, foam and aeration resistance, with dependable shear stable viscosity index (VI) improve performance, helping optimise system protection.

In laboratory testing, Rando HDZ provided up to 5% improvement in overall hydraulic pump efficiency when compared with typical monograde hydraulic oil with VI<105 performance.

### Customer benefits

- Premium Group II base oils and shear stable viscosity modifier offers high viscosity index for use over a wide temperature range
- Anti-wear additives protect against wear under load with rust and corrosion inhibitors designed for protection in steel and copper
- Good hydrolytic stability and water separation characteristics help prevent deposit formation and rust in the presence of water
- Oxidation inhibitors reduce oil thickening and deposits, offering improved filterability and foam suppression helping cut downtime

### Product highlights

- **Formulated for wide temperature use**
- **Designed to protect under load**
- **Offers good water separation**
- **Promotes reliable filterability**

#### Selected specification standards include:

Arburg	ASTM
Bosch Rexroth	Cincinnati Machine
DIN	Eaton Vickers
ISO	JCMAS
US Steel	

## Applications

- Industrial hydraulic equipment subject to a wide variation in operating temperature range
- Mobile, construction and agricultural equipment where water separation is critical
- Hydraulic systems with vane, gear or piston pumps
- Forklift trucks in refrigerated environments
- Plastic injection moulding machines
- Marine deck equipment, steering gear, thrusters and automatic controls
- Machine tools
- Enclosed gear systems (dependent on load)

## Approvals, performance and recommendations

### Approvals

- Arburg (ISO 46)

### Performance

- DIN 51524-3 HVLP
- ASTM D6158, HV (ISO 32, 46, 68, 100)
- ISO 11158 Class HV (ISO 15, 32, 46, 68, 100)
- Cincinnati Machine P68 (ISO 32), P70 (ISO 46), P69 (ISO 68)
- Eaton Vickers M-2950-S (mobile applications), I-286-S (industrial applications) (ISO 32, 46, 68)
- Bosch Rexroth RE 90220
- US Steel 127, 136
- JCMAS HK-1 (ISO 32, 46)

Typical test data				
Test	Test methods	Results		
Viscosity Grade		15	22	32
<b>Shelf Life: 60 months from date of filling indicated on the product label.</b>				
Kinematic viscosity at 40°C, mm <sup>2</sup> /s	ASTM D445	15	22	32
Kinematic viscosity at 100°C, mm <sup>2</sup> /s	ASTM D445	3.89	5.0	6.45
Viscosity Index	ASTM D2270	159	170	151
Flash Point COC, °C	ASTM D92	160	166	216
Pour Point, °C	ASTM D97	-57	-39	-42
Density at 15°C, kg/l	ASTM D4052	0.855	0.859	0.867
Copper corrosion (3 h, 100 °C)	ASTM D130	1A	1A	1A
Foam Seq. II (after blowing), ml	ASTM D892	10	10	10
Foam Seq. II (after 10' standing), ml	ASTM D892	0	0	0

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Typical test data				
Test	Test methods	Results		
Viscosity Grade		46	68	100
<b>Shelf Life: 60 months from date of filling indicated on the product label.</b>				
Kinematic viscosity at 40°C, mm <sup>2</sup> /s	ASTM D445	46	68	100
Kinematic viscosity at 100°C, mm <sup>2</sup> /s	ASTM D445	8.16	11.0	14.0
Viscosity Index	ASTM D2270	154	152	150
Flash Point COC, °C	ASTM D92	228	230	246
Pour Point, °C	ASTM D97	-42	-42	-42
Density at 15°C, kg/l	ASTM D4052	0.874	0.880	0.884
Copper corrosion (3 h, 100 °C)	ASTM D130	1A	1A	1A
Foam Seq. II (after blowing), ml	ASTM D892	10	10	10
Foam Seq. II (after 10' standing), ml	ASTM D892	0	0	0

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.

**Disclaimer** Chevron accepts no liability for any loss or damage suffered as a result of using this product for any application other than applications specifically stated in any Product Data Sheet's.

**Health, safety, storage and environmental** Based on current available information, this product is not expected to produce adverse effects on health when used for the intended application and in accordance with the recommendations provided in the Material Safety Data Sheet (MSDS). MSDS's are available upon request through your local sales office, or via the Internet. This product should not be used for purposes other than its intended use. When disposing of used product, take care to protect the environment and follow local legislation.

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