RANDO® HD

10, 22, 32, 46, 68, 100, 150, 220, 320

PRODUCT DESCRIPTION

Rando® HD oils are formulated with premium base oil technology and designed to give robust protection to hydraulic pumps in mobile and stationary systems.

CUSTOMER BENEFITS

Rando HD oils deliver value through:

- **Long equipment life** — Special antiwear additive package minimizes wear by protecting surfaces when load causes breakdown of the lubricant film.
- **Minimized downtime** — Effective rust and oxidation inhibitor system helps 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 help ensure smooth operation and system efficiency.
- **Optimal oil service life** — High oxidation stability resists oil thickening and deposit formation in service, minimizing the possibility of an unscheduled change of hydraulic fluid.

FEATURES

Rando HD **ISO 32**, **46**, and **68** are formulated with Group II base stocks.

Rando HD **ISO 100**, **150**, **220,** and **320** are designed for lubricant applications requiring an AGMA R&O gear oil lubricant in the applicable viscosity grade.

Rando HD oils provide excellent:

- antiwear protection
- oxidation and corrosion inhibition
- foam and aeration suppression

Under moderate loads and temperatures, the high viscosity index of Rando HD oils help ensure good film strength between metal surfaces and is further enhanced by antiwear additive protection.

Product(s) manufactured in the USA, Colombia and El Salvador.
Always confirm that the product selected is consistent with the original equipment manufacturer's recommendation for the equipment operating conditions and customer's maintenance practices.

A **Chevron** company product

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APPLICATIONS

ISO Grade	10	22	32	46	68
spindle lubricants where zinc-free oils are not a requirement	X	X			
high performance industrial applications where pressures may exceed 5000 psi			X	X	X
lightly loaded reciprocating compressors			X	X	X

ISO Grade	100	150	220	320
hydraulic equipment reduction gears where EP is not required	X	X	X	X
plain and antifriction bearings	X	X	X	X
circulating oil systems	X	X	X	X
applications where AGMA rust and oxidation inhibited oils are required	X	X	X	X

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CLAIMS AND SPECIFICATIONS

ISO Grade	10	22	32	46	68	100	150	220	320
Arburg Injection Molding				**A**					
Bosch Rexroth RDE 90245			**A**	**A**	**A**				
Eaton (Vickers) E-FDGN-TB002-E			**A**	**A**	**A**				
Eaton (Vickers) 35VQ25A (Pump Test) I-286-S (Stationary) M-2950-S (Mobile)			M	M	M				
Fives Cincinnati[a] (formerly MAG Cincinnati, Cincinnati Machine, Cincinnati Milacron)			M p-68	M p-70	M p-69				
General Motors LS2 LH			M	M	M				
GROB Lubricants Chart	**A**	**A**	**A**	**A**	**A**				
Husky Injection Molding				**A**					
Joy HO-S					M				
NSF H2[b]			**A**	**A**	**A**	**A**	**A**	**A**	**A**
Parker Hannifin (Denison) HF-0, HF-1, HF-2			**A**	**A**	**A**				
Rexnord Falk Class A, F, J, Planetgear, Class D, G, Y, Link Belt Model R					**A**	**A**			
ZF TE-ML 04K			**A**	**A**					
ANSI/AGMA 9005-E02, 9005-F16 R&O			M	M	M	M	M	M	M
ASTM D6158 HM	M	M	M	M	M	M	M		
DIN 51524-2 HLP		M	M	M	M	M			
ISO 11158 L-HM	M	M	M	M	M	M	M		
JCMAS HK VG 32, 46			M	M					
SAE MS1004-HM		M	M	M	M	M			
US Steel (AIST) 126, 127			M	M	M				

a Obsolete specification

b Rando HD ISO grades 32, 46, 68, 100, 150, 220, 320 are registered by **NSF** and are acceptable as lubricants where there is no possibility of food contact (H2) in and around food processing areas. The NSF Nonfood Compounds Registration Program is a continuation of the USDA product approval and listing program, which is based on meeting regulatory requirements of appropriate use, ingredient review and labeling verification.

A: Approved for

M: Meets or exceeds requirements

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TYPICAL TEST DATA

ISO Grade	Test Method	10	22	32	46	68
Product Number		*273252*	*273276*	*273277*	*273278*	*273279*
SDS/MSDS Number *USA* *Colombia* *El Salvador*		 *23706* *32579* —	 *23548* *32605* —	 *23556* *33476* *33477*	 *23556* *33476* *33477*	 *23556* *33476* *33477*
API Gravity	ASTM D287	28.7	35.4	33.3	31.9	31.5
Density at 15°C, kg/L	ASTM D4057	0.8866	0.8463	0.8585	0.8655	0.868
Viscosity, Kinematic cSt at 40°C cSt at 100°C	 ASTM D445	 10.3 2.5	 23.1 4.4	 32 5.5	 45.7 6.9	 67.2 8.8
Viscosity, Saybolt SUS at 100°F SUS at 212°F	 ASTM D2161	 63 35	 120 41	 157 44	 225 48	 334 54
Viscosity Index	ASTM D2770	48	98	110	107	105
Flash Point, °C(°F)	ASTM D92	154(309)	177(351)	220(428)	226(439)	235(455)
Pour Point, °C(°F)	ASTM D97	-60(-76)	-38(-36)	-38(-36)	-36(-33)	-35(-31)
Copper Corrosion 3h at 100°C	ASTM D130	1b	1b	1b	1b	1b
Foam Test, Seq. I Tendency, mL Stability, mL	 ASTM D892	 20 0	 20 0	 10 0	 10 0	 10 0
Rust Test, Procedure A & B	ASTM D665	Pass	Pass	Pass	Pass	Pass
Water Separability, minutes to <3mL at 54°C	 ASTM D1401	 5	 10	 15	 15	 20
Oxidation Stability, TOST Hours to 2.0 mg KOH/g TAN	 ASTM D943	 —	 —	 >6000	 >6000	 >6000
FZG Gear Test Fail Load Stage	DIN 51354	—	—	12	12	12

Minor variations in product typical test data are to be expected in normal manufacturing.

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TYPICAL TEST DATA

ISO Grade	Test Method	100	150	220	320
Product Number		*273228*	*273280*	*273281*	277316
SDS/MSDS Number *USA* *Colombia* *El Salvador*		 *23550* *33474* *33475*	 *23550* *33474* *33475*	 *23550* *33474* —	 23550 33474 —
API Gravity	ASTM D287	31	29.9	28.7	27.8
Density at 15°C, kg/L	ASTM D4057	0.8696	0.8754	0.8768	0.8874
Viscosity, Kinematic cSt at 40°C cSt at 100°C	 ASTM D445	 98.9 11.5	 147.9 14.6	 209 18.2	 301.8 23.4
Viscosity, Saybolt SUS at 100°F SUS at 210°F	 ASTM D2161	 495 64	 751 76	 1105 93	 1617 117
Viscosity Index	ASTM D2770	106	103	96	97
Flash Point, °C(°F)	ASTM D92	250(482)	260(500)	271(520)	277(531)
Pour Point, °C(°F)	ASTM D97	-15(+5)	-12(+10)	-12(+10)	-12(+10)
Copper Corrosion 3h at 100°C	ASTM D130	1b	1b	1b	1b
Foam Test, Seq. I Tendency, mL Stability, mL	 ASTM D892	 10 0	 10 0	 10 0	 10 0
Rust Test, Procedure A & B	ASTM D665	Pass	Pass	Pass	Pass
Water Separability, minutes to <3mL at 82°C	 ASTM D1401	 20	 22	 <30	 <30
Oxidation Stability, TOST Hours to 2.0 mg KOH/g TAN	 ASTM D943	 >2000	 >1200	 >1000	 >1000
FZG Gear Test Fail Load Stage	DIN 51354	12	12	12	12

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