RANDO® HDZ

15, 22, 32, 46, 68, 100

PRODUCT DESCRIPTION

Rando® HDZ oils are formulated with premium base oil technology and designed to give robust protection to hydraulic pumps in mobile and stationary systems. These are high viscosity index hydraulic oils that provide a wide operating temperature range.

CUSTOMER BENEFITS

Rando HDZ oils deliver value through:

- **High oxidation stability** — Long service life in high pressure service.
- **Protection against rust and corrosion** — Gives excellent protection against corrosion of both copper and steel. Passes the ASTM D665A distilled water rust test and ASTM D665B salt water rust test.
- **High viscosity index** — Minimum change in viscosity over a wide range of operating temperatures.
- **Foam inhibition** — Contains special foam suppressant.
- **Excellent antiwear properties** — Provides excellent wear protection.
- **Good stability** — in the presence of water in the ASTM D2619 Hydrolytic Stability Test and in the presence of copper and steel in the MAG Cincinnati Machine Thermal Stability Test.
- **Fast water separation** — Protects against rust problems by fast release of water.
- **Good filterability** — Excellent thermal and hydrolytic stability helps prevent formation of deposits which may interfere with filtration in equipment having close tolerances.

FEATURES

Rando HDZ oils incorporate antiwear additives, oxidation and corrosion inhibitors, foam and aeration suppressants, and a shear stable viscosity index improver.

Hydraulic systems, due to the nature of their operation, experience accelerated wear unless they are protected by clean, high quality antiwear hydraulic oils. Surging pressures in pumps and valves can increase metal-to-metal contact unless antiwear protection is present. The antiwear additives in Rando HDZ oils plate out on the metal surfaces. This plating minimizes metal-to-metal contact, which is most severe in vane-, piston-, and gear-type pumps. As hydraulic pressures increase over 1000 psi, the need for antiwear protection increases proportionally.

In field performance demonstrations, Rando HDZ oils provided up to 3.4% improvement in overall hydraulic pump efficiency when compared to a typical conventional hydraulic oil (a lower VI product with VI<105).

Product(s) manufactured in the USA.
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	15	22	32	46	68	100
high performance industrial applications where pressures may exceed 5000 psi			X	X	X	
lightly loaded reciprocating compressors			X	X	X	
hydraulic equipment reduction gears where EP is not required						X
plain and antifriction bearings						X
circulating oil systems						X
applications where AGMA rust and oxidation inhibited oils are required						X

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CLAIMS AND SPECIFICATIONS

ISO Grade	15	22	32	46	68	100
Arburg Injection Molding				**A**		
Bosch Rexroth RDE 90245			**A**	**A**	**A**	
Bosch Rexroth RA & RE 90220[a], 90221[a]			M	M	M	
Danfoss/Eaton 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	
Frank Mohn, (Framo) hydraulic cargo pumping				**A**		
MAN Truck & Bus OEM Engine Specifications	**A**					
Parker Hannifin (Denison) HF-0, HF-1, HF-2			**A**	**A**	**A**	
ZF TE-ML 04R			**A**	**A**		
ANSI/AGMA 9005-E02, 9005-F16 R&O			M	M	M	M
ASTM D6158 HM, HV	M	M	M	M	M	M
DIN 51524-2 HLP, 51524-3 HVLP	M	M	M	M	M	M
ISO 11158 L-HM, L-HV	M	M	M	M	M	M
JCMAS HK VG 32, 46			M	M		
SAE MS1004-HM, HV		M	M	M	M	M
US Steel (AIST) 126,127			M	M	M	

a Obsolete specification

A: Approved for

M: Meets or exceeds requirements

Refer to the service manual of the equipment to ensure that the minimum fluid viscosity requirements are met at the highest operating temperature. Please consult with your equipment manufacturer if equipment is operating outside normal operating conditions.

Do not use in high pressure systems in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.

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TYPICAL TEST DATA

ISO Grade	Test Method	15	22	32	46	68	100
Product Number		*273282*	*273264*	*273260*	*273261*	*273262*	*273263*
SDS Number *U.S.* *Mexico* *Colombia*		 *23543* *23545*	 *23537* *23539* *51622*	 *23537* *23539* *51622*	 *23537* *23539* *51622*	 *23537* *23539* *51622*	 *23537* *23539* *51622*
API Gravity	ASTM D287	27.4	32.9	34	32.2	30.8	30.4
Density at 15°C, kg/L	ASTM D4057	0.8897	0.8544	0.843	0.8638	0.8706	0.8728
Viscosity, Kinematic cSt at 40°C cSt at 100°C	 ASTM D445	 15.8 3.9	 22.6 5.1	 33.2 6.6	 47.1 8.3	 69.6 11.2	 97.8 14.0
Viscosity, Saybolt SUS at 100°F SUS at 212°F	 ASTM D2161	 81.4 39.1	 108 43.0	 150 46.9	 214 53.1	 316 62.8	 464 74.8
Viscosity Index	ASTM D2770	148	152	159	155	154	146
Flash Point, °C(°F)	ASTM D92	150(302)	188(370)	220(428)	226(439)	212(414)	232(450)
Pour Point, °C(°F)	ASTM D97	-62(-80)	-54(-65)	-50(-58)	-46(-51)	-43(-45)	-40(-40)
Brookfield Viscosity cP at -20°C cP at -30°C cP at -40°C	 ASTM D2983	 500 1660 6920	 750 2340 9120	 1290 4900 25100	 2330 9120 -	 4450 19300 -	 8040 - -
Copper Corrosion 3h at 100°C	 ASTM D130	 1b	 1b	 1b	 1b	 1b	 1b
Foam Test, Seq. I Tendency, mL Stability, mL	 ASTM D892	 50 0	 40 0	 10 0	 0 0	 0 0	 0 0
Rust Test, Procedure A & B	ASTM D665	Pass	Pass	Pass	Pass	Pass	Pass
Water Separability, minutes to <3mL at 54°C	ASTM D1401	10	10	10	15	15	—
Water Separability, minutes to <3mL at 82°C	ASTM D1401	—	—	—	—	—	10
Oxidation Stability, TOST Hours to 2.0 mg KOH/g TAN	ASTM D943	—	—	>6000	>6000	>6000	>3000

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ISO Grade	Test Method	15	22	32	46	68	100
FZG Gear Test Fail Load Stage	DIN 51354	—	—	12	12	12	12
Dielectric Strength, kV[a]	ASTM D877[b]	35	35	35	35	35	35

a Dielectric strength value applies only to "point of manufacture" of packaged products produced at a Chevron manufacturing facility. (Does not apply to bulk packaging). The oil will quickly lose its high dielectric strength value when exposed to contamination and to very small amounts of moisture and water.

b Industry standard test method for measuring kV values is not precise and test results can differ significantly.

Minor variations in product typical test data are to be expected in normal manufacturing. In a clean, dry environment, Rando HDZ 15, 22, 32, 46, 68 and 100 typically meet a dielectric strength of 35 kVa (ASTM D877b).

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