# RANDO® HDZ ISOCLEAN® CERTIFIED LUBRICANT

## 15, 22, 32, 46, 68, 100

## PRODUCT DESCRIPTION

Rando® HDZ ISOCLEAN® Certified Lubricants 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. Chevron ISOCLEAN Certified Lubricants have been certified to meet specified ISO Cleanliness standards at point of delivery using industry leading filtration and testing technology. ISOCLEAN Certified products are the first step for contamination control and maximizing component life.

## CUSTOMER BENEFITS

Rando HDZ ISOCLEAN Certified Lubricants deliver value through:

- **Ready to use** — Enables users to meet stringent original equipment manufacturers' cleanliness standards for fill lubricants.
- **Flexibility** — ISO Cleanliness targets can be customized to fit your business application needs.
- **Peace of mind** — Each delivery of Chevron ISOCLEAN Certified Lubricant includes an ISOCLEAN Certificate of Analysis.
- **OE fluid cleanliness requirements** — Customized to meet specific equipment manufacturers' fluid cleanliness requirements.
- **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 ISOCLEAN Certified Lubricants 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 ISOCLEAN Certified Lubricants 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

Product(s) manufactured in the USA.
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A **Chevron** company product

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IO-174 ISOCLEAN

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1000 psi, the need for antiwear protection increases proportionally.

In field performance demonstrations, Rando HDZ ISOCLEAN Certified Lubricants 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).

## 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 RA & RE 90220, 90221 | | | M | M | M | |
| Bosch Rexroth RDE 90245 | | | **A** | **A** | **A** | |
| Eaton (Vickers) 35VQ25A (Pump Test) I-286-S (Stationary) M-2950-S (Mobile) | | | **A** | **A** | **A** | |
| 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, T6H20C | | | **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* | | *278064* | *278065* | *254609* | *254610* | *254611* | *274323* |
| *SDS Number*<br>*U.S.*<br>*Canada*<br>*Mexico*<br>*Colombia* | | <br>*23543*<br>*23544*<br>*23545* | <br>*42265*<br>*42266*<br>*42267*<br>*51622* | <br>*23537*<br>*23538*<br>*23529*<br>*51622* | <br>*23537*<br>*23538*<br>*23529*<br>*51622* | <br>*23537*<br>*23538*<br>*23529*<br>*51622* | <br>*23537*<br>*23538*<br>*23539*<br>*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<br>cSt at 40°C<br>cSt at 100°C | <br>ASTM D445 | <br>15.8<br>3.9 | <br>22.6<br>5.1 | <br>33.2<br>6.6 | <br>47.1<br>8.3 | <br>69.6<br>11.2 | <br>97.8<br>14.0 |
| Viscosity, Saybolt<br>SUS at 100°F<br>SUS at 212°F | <br>ASTM D2161 | <br>81.4<br>39.1 | <br>108<br>43.0 | <br>150<br>46.9 | <br>214<br>53.1 | <br>316<br>62.8 | <br>464<br>74.8 |
| Viscosity Index | ASTM D2770 | 148 | 152 | 159 | 155 | 154 | 146 |
| Flash Point, °C(°F) | ASTM D92 | 150(302) | 188(370) | 220(428) | 216(420) | 212(414) | 232(450) |
| Pour Point, °C(°F) | ASTM D97 | -62(-80) | -54(-65) | -50(-58) | -46(-51) | -43(-45) | -40(-40) |
| Brookfield Viscosity<br>cP at -20°C<br>cP at -30°C<br>cP at -40°C | <br><br>ASTM D2983 | <br>500<br>1660<br>6920 | <br>750<br>2340<br>9120 | <br>1290<br>4900<br>25100 | <br>2330<br>9120<br>- | <br>4450<br>19300<br>- | <br>8040<br>-<br>- |
| Copper Corrosion<br>3h at 100°C | ASTM D130 | 1b | 1b | 1b | 1b | 1b | 1b |
| Foam Test, Seq. I<br>Tendency, mL<br>Stability, mL | <br>ASTM D892 | <br>50<br>0 | <br>40<br>0 | <br>10<br>0 | <br>0<br>0 | <br>0<br>0 | <br>0<br>0 |
| Rust Test,<br>Procedure A & B | ASTM D665 | Pass | Pass | Pass | Pass | Pass | Pass |
| Water Separability,<br>minutes to <3mL<br>at 54°C | <br>ASTM D1401 | <br>10 | <br>10 | <br>10 | <br>15 | <br>15 | <br>— |
| Water Separability,<br>minutes to <3mL<br>at 82°C | <br>ASTM D1401 | <br>— | <br>— | <br>— | <br>— | <br>— | <br>10 |
| Oxidation Stability,<br>TOST Hours to<br>2.0 mg KOH/g TAN | <br>ASTM D943 | <br>— | <br>— | <br>>5000 | <br>>5000 | <br>>5000 | <br>>3000 |

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|---|---|---|---|---|---|---|---|
| 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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