



HYDRAULIC OILS

Rando® HDZ

**Description**

Rando HDZ oils are high-viscosity, high-performance, antiwear hydraulic oils, formulated specifically to cater to the widely varying operating temperatures in the marine environment. These oils are blended from high-viscosity index lubricating oil stocks and a number of specially selected additives. Rando HDZ meet s the requirements of major hydraulic equipment manufacturers for rust- and oxidation-inhibited hydraulic fluids, as well as for EP or antiwear hydraulic fluids.

Typical Characteristics

ISO Viscosity Grade	15	22	32	46	68	100
Code	044497	042828	044498	040926	041141	041690
Density at 15°C, kg/l	0.88	0.87	0.87	0.88	0.88	0.88
Flash point, COC, °C	150	165	200	215	225	250
FZG test (A/8.3/90), failure load stage	11	11	11	12	12	12
Oxidation characteristics (ASTM D 943) hours to TAN = 2.0 mgKOH/g	2,500	2,500	2,500	2,500	2,500	2,000
Pour point, °C	-52	-48	-48	-42	-39	-36
Rusting test, synthetic seawater	Pass	Pass	Pass	Pass	Pass	Pass
Viscosity, kinematic, mm ² /s (cSt) at 40°C	15	22	32	46	68	100
at 100°C	3.8	5.0	6.3	8.6	11.0	13.8
Viscosity index	151	165	155	154	153	139

Recommended Uses

Rando HDZ oils are recommended for use in all shipboard hydraulic machinery and specifically for hydraulic equipment used under extreme operating temperatures such as deck machinery. Rando HDZ oils meet the most severe requirements of major hydraulic equipment manufacturers and have passed numerous industry test procedures, including Denison HF-O for severe-duty axial piston and vane pump service; Vickers M-2950-S and I-286-S for mobile hydraulic systems; Cincinnati Milacron P-68/69/70 for systems in machine tool service; US Steel 126, 127 and DIN 51524/3 (HVLP). The ISO 46 grade is approved by Framo.

Performance Benefits**1. Anti Wear and EP Properties**

Extends the life of hydraulic pump and motor parts in heavy-duty service and protects against destructive wear under overload conditions.

2. Ultra-High Viscosity Index

Contains a specially selected high shear-stable viscosity index improver, which gives the lubricant a superior operating temperature window, even under high shear-rate conditions. Rando HDZ oils provide real "crossgrading" benefits and stay in grade, even when subjected to the shearing condition of high-speed, high-pressure hydraulic systems in severe service.

3. Low Pour Point

Remains liquid at low operating temperatures.

4. Oxidation Stability

High oxidation stability ensures long life and prevents accumulation of sludge and deposits.

5. Corrosion Protection

Protects against rusting of close-fitting hydraulic system parts and prevents the regeneration of abrasive rust and corrosion.

6. Water Resistance

Excellent water-separation characteristics assure speedy removal of water from leaks and condensation.

7. Foam Resistant

Combined with selected foam inhibitors, resists foaming, thus preventing accumulation of surface foam at high-oil circulation rates.

8. Filterability

Rando HDZ oils show excellent filterability properties even in the presence of water. They passed the AFNOR NFE 48 dry and wet filterability tests.