

R&O

Hydraulic Oil Series



R&O (Rust & Oxidation) Hydraulic Oil Series is blended from premium quality base stocks with a carefully selected additive package to deliver long-lasting protection for hydraulic and lubrication systems. Available in ISO grades 22 through 460, these oils resist rust, oxidation, and moisture across a wide range of industrial applications.

PREMIUM R&O ADDITIVE TECHNOLOGY

The R&O series achieves 2,700+ hours under ASTM D-943 turbine oil oxidation testing and meets DIN 51524, Denison HF-1, Cincinnati-Milacron, and U.S. Steel 126 specifications. A demulsifier system rejects water and prevents sludge, while a metal passivator protects brass, bronze, and copper components.

PRIMARY APPLICATIONS

The R&O series is formulated for hydraulic and lubrication systems where reliability is paramount:

- Hydraulic systems operating under moderate to high pressures
- Industrial machinery where corrosion protection and long oil life are required
- Circulating oil and lubrication systems requiring extended service intervals
- Equipment exposed to moisture, condensation, or contamination
- Applications requiring compliance with multiple industry specifications

KEY BENEFITS

- Extended oil life – 2,700+ hours – per ASTM D-943 turbine oxidation testing
- Metal passivator protects brass, bronze, and copper components
- Demulsifier rejects water, preventing sludge and filter clogging
- Low foaming for consistent system performance and pressure stability
- Excellent hydrolytic stability – prevents acid formation and corrosion
- Meets DIN 51524, Denison HF-1, Cincinnati-Milacron, and U.S. Steel 126

OUTSTANDING OXIDATION AND THERMAL STABILITY

The R&O series achieves 2,700+ hours of oxidation life under ASTM D-943 testing – far exceeding industry minimum requirements. This extended stability translates to longer drain intervals, reduced oil consumption, and lower total lubrication costs.

EFFECTIVE WATER SEPARATION

The demulsifier additive system rapidly separates water from the oil, preventing emulsion, sludge, and corrosive acid compounds that degrade hydraulic system performance and damage seals, pumps, and valves over time.

COMPREHENSIVE CORROSION PROTECTION

Metal passivators protect brass, bronze, and copper hydraulic components from corrosion, while rust inhibitors prevent iron and steel surfaces from developing rust deposits — even when moisture enters the system.

LOW FOAM FOR STABLE HYDRAULIC PERFORMANCE

The anti-foam additive system quickly collapses entrained air bubbles, preventing foam-related pressure inconsistencies, temperature increases, and premature pump and actuator wear in sensitive hydraulic circuits.

BROAD VISCOSITY GRADES

Available in ISO grades 22 through 460, the R&O series covers the full range of hydraulic system requirements — from lightweight circulating systems to heavy gear and hydraulic applications requiring higher viscosity protection.

MEETS MULTIPLE INDUSTRY SPECIFICATIONS

Formulated to meet or exceed DIN 51524, Denison HF-1, Cincinnati-Milacron P-series, U.S. Steel 126, MIL-H-17672, and AFNOR specifications — a compliant solution for equipment with specific fluid requirements.

Typical Inspections and Properties

ISO Grade	22	32	46	68	100	150	220	320	460
Kinematic Viscosity									
cSt @ 40°C, ASTM D-445	20	31	44	64.5	97.7	150	220	320	455
cSt @ 100°C, ASTM D-445	4.02	5.17	6.29	8.33	10.4	12.4	19.7	28.7	31.2
SUS @ 100°F	105	155	210	330	519	793	1163	1692	2400
SUS @ 210°F	39.8	43.5	47.3	55.5	63.7	71.8	105.3	130	153
Flash Point, °F, ASTM D-92	380	410	420	440	465	490	500	500	575
Density, lbs./ gal	7.18	7.24	7.28	7.33	7.35	7.41	7.43	7.44	7.45

Procedure	Specification	Criteria	Result
Rotary Bomb D-2272	USS 126	120	520
Turbine Oxidation – Hrs. to 2.0 NNA, ASTM D-943	MIL-L-17672 D	1000 min	2,700
– Sludge, mg	Denison HF-1	100 max	37
– Copper, mg		100 max	0.54
– Iron, mg		100 max	0.96
Thermal Stability – Copper	Cincinnati-Milacron (CMM)	5	2
– Steel		2	1
– Sludge, mg/ 100ml		25	7
Rust Test A – Distilled Water, ASTM D-665	Pass	Pass	Pass
Rust Test B – Synthetic Sea Water, ASTM D-665	Pass	Pass	Pass
Demulsibility, ASTM D-1402	USS 126, AFNOR, MIL	40-37-3	40-40-0
54.4°C ml: oil-water emulsion (m)	USS 126, AFNOR, MIL	(30)	(15)
Acid Number, New Oil D-974	CMM, AFNOR, MIL, DIN		0.15

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