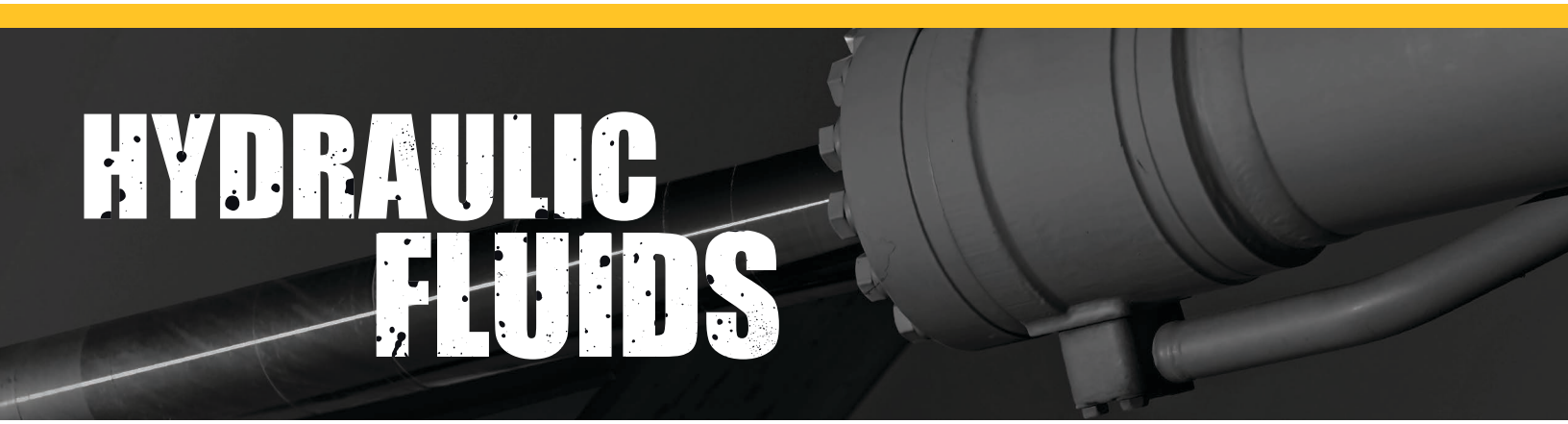
Quaker
It's what's inside that counts.®



QUINTOLUBRIC® 888-46
FIRE RESISTANT HFD-U HYDRAULIC FLUID
APPLICATION SHEET

BENEFITS

- Global formulation
- Best-in-class oxidation stability
- Excellent shear stability
- Environmentally friendly

FM APPROVED

APPLICATIONS

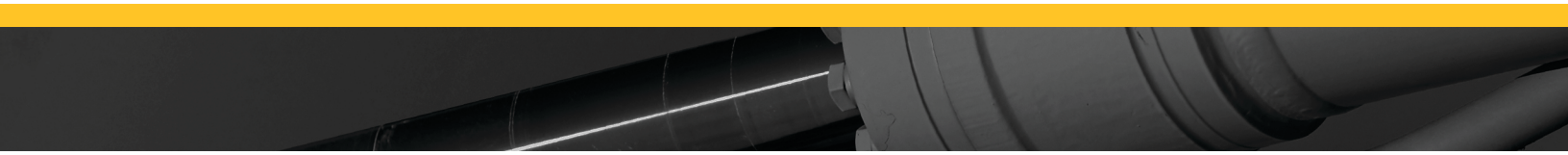
QUINTOLUBRIC® 888-46 was designed to replace anti-wear, mineral oil-based hydraulic fluids used in applications where fire hazards exist. QUINTOLUBRIC® 888-46 can also be used in environmentally sensitive hydraulic applications without compromising the overall hydraulic system operations. This fluid does not contain water, mineral oil, or phosphate ester, and is based on high-quality, synthetic, organic esters and carefully selected additives to achieve excellent hydraulic fluid performance. QUINTOLUBRIC® 888-46 offers the lubrication level of premium, antiwear hydraulic oils, and can be used with hydraulic components from all major manufacturers.

COMPATIBILITY

The chart on the back contains our recommendations regarding the use of QUINTOLUBRIC® 888-46 with commonly used elastomers. The elastomer applications listed are "Static," which refers to trapped nonmoving seals such as O-rings in valve sub-plates and rigid, low pressure hose connections; "Mild-Dynamic," whose applications include accumulator bladders and hose linings where the hoses are exposed to high pressure and light flexing; and "Dynamic," which refers to cylinder rod seals, pump shaft seals and constantly flexing hydraulic hose.

PROPERTIES

PROPERTIES (TEST METHOD)	TYPICAL VALUES
Appearance	Yellow to amber fluid
Kinematic Viscosity (ASTM D445)	
At 0°C	320 mm^2/s or cSt
At 20°C	109 mm^2/s or cSt
At 40°C	47.5 mm^2/s or cSt
At 100°C	9.5 mm^2/s or cSt
Viscosity Index (ASTM D2270)	190
Density at 15°C (ASTM D1298)	0.92 g/cm^3
Acid Number (ASTM D974)	2.0 mg KOH/g
Pour Point (ASTM D97)	< -30°C (< -22°F)
Foam Test at 25°C (ASTM D892)	
Sequence I	50-0 ml-ml
Corrosion Protection	
ISO 4404-2	Pass
ASTM D 665A/D130	Pass/1a
Dry TOST (ASTM D943 mod.)	800 hrs
Flash Point (ASTM D92)	300°C (572°F)
Fire Point (ASTM D92)	360°C (680°F)
Air Release (ASTM D3427)	7 min
Vane Pump Test (ASTM D2882)	<5 mg wear
Gear Lubrication (DIN 51354-2)	>12 FZG load stage
Water Separability (ASTM D1401)	41-39-0 (30) ml-ml-ml (min.)



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METALS

QUINTOLUBRIC® 888-46 is compatible with iron and steel alloys and most nonferrous metals and their alloys. It is not compatible with lead, cadmium and has limited compatibility with alloys containing high levels of these metals. QUINTOLUBRIC® 888-46 has limited compatibility with hot dipped or electro galvanized surfaces and good compatibility with zinc containing alloys. Suitable substitutes for these materials are available and should be used.

PAINTS AND COATINGS

QUINTOLUBRIC® 888-46 is compatible with multi-component epoxy coatings. It is not compatible with zinc-based coatings. Specific coating and application recommendations can be obtained from coating manufacturers or directly from Quaker.

FLUIDS

QUINTOLUBRIC® 888-46 is compatible and miscible with nearly all mineral oil and polyolester-type hydraulic fluids and with some, but not all, phosphate esters. It is not miscible or compatible with water-containing fluids. For conversion recommendations, please contact Quaker.

ELASTOMERS

ISO 1629	DESCRIPTION	S*	MD*	D*
NBR	Medium to high nitrile rubber (Buna N,>30% acrylonitrile)	C	C	C
FPM	Fluoroelastomer (Viton®)	C	C	C
CR	Neoprene	S	S	S
IIR	Butyl rubber	S	N	N
EPDM	Ethylene propylene rubber	N	N	N
PU	Polyurethane	C	C	C
PTFE	Teflon®	C	C	C

**(S- Static, MD- Mild Dynamic, D- Dynamic)
C = Compatible
S = Satisfactory for short term use, but replacement with a completely compatible elastomer is recommended at the earliest convenience.
N = Not Compatible

ENGINEERING DATA

PROPERTIES (TEST METHOD)	TYPICAL VALUES
Specific Heat at 20°C (D2766)	2.06 kJ/kg °C .49 Btu/lb °F
Coefficient of Thermal Expansion at 20°C (D1903)	6 X 10^{-4} per °C
Vapor Pressure (D2551) At 20°C At 66°C	 3.2 X 10^{-6} mmHg 7.5 X 10^{-6} mm Hg
Bulk Modulus at 20°C At 210 bar At 3,000 psi	 1.87 X 10^{5} N/cm^2 266,900 psi
Thermal Conductivity at 19°C (D2717)	0.167 J/sec/m/°C
Dielectric Breakdown Voltage (D877)	30 kV

*country specific SDS are available

IGNITION TEST DATA	
Hot Manifold Ignition Temperature (ISO 20823)	>450°C
Auto Ignition Temperature (DIN 51794)	>400°C (>750°F)

BIODEGRADABILITY TEST DATA	
OECD-301 c	86.5% biodegradable after 28 days

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