Quintolubric® 888 Series

Synthetic, fire-resistant, biodegradable hydraulic fluid

For the first time in history, one product is available worldwide to meet the needs of a global industry.

Quaker Chemical

Delivering everywhere,
the best from anywhere.

Typical Properties

Property	Method	Quintolubric® 888-46	Quintolubric® 888-68
Appearance	QTN G 001	Yellow to amber fluid	Yellow to amber fluid
Kinematic viscosity	ASTM D445		
at 0°C		360 mm^2/s or cSt	615 mm^2/s or cSt
at 20°C		102 mm^2/s or cSt	165 mm^2/s or cSt
at 40°C		46 mm^2/s or cSt	68 mm^2/s or cSt
at 100°C		10 mm^2/s or cSt	14 mm^2/s or cSt
Viscosity index	DIN 51564	220	215
Density at 15°C	ASTM D 1298	0.90 g/cm^3	0.91 g/cm^3
Acid number	QTN A 005	2.0 mg KOH/g	1.5 mg KOH/g
Pour point	ASTM D 97	<-20°C (<-4°F)	<-20°C (<-4°F)
Foam test	ASTM D 892		
	Sequence I	50-0 ml	50-0 ml
Corrosion protection	CETOP R 48 H	Pass	Pass
	ASTM D 665 A	Pass	Pass
Flash point	ASTM D 92	275°C (527°F)	275°C (527°F)
Fire point	ASTM D 92	325°C (617°F)	325°C (617°F)
Auto ignition temperature	DIN 51794	450°C (842°F)	450°C (842°F)
Air release	ASTM D 3427	5 min.	5 min.
Fire resistance	Factory Mutual Research	Pass	Pass
Pump test	ASTM D 2882	< 5 mg wear	< 5 mg wear
Gear lubrication	DIN 51354/2	> 12 FZG load stage	> 12 FZG load stage
Demulsibility	ASTM D 1401	41-39-0 (15) ml-ml-ml (min.)	42-38-0 (30) ml-ml-ml (min.)
Specific heat at 20°C	ASTM D 2766	2.06 kJ/kg °C 0.49 Btu/lb °F	2.06 kJ/kg °C 0.49 Btu/lb °F
Coefficient of thermal expansion at 20°C	ASTM D 1903	6×10^{-4} per °C	6×10^{-4} per °C
Vapor pressure			
at 20°C	ASTM 02551	3.2×10^{-6} mm Hg	3.2×10^{-6} mm Hg
at 66°C		7.5×10^{-6} mm Hg	7.5×10^{-6} mm Hg
Bulk modulus at 20°C			
at 210 bar		1.87×10^5 N/cm^2	1.87×10^5 N/cm^2
at 3,000 psi		266,900 psi	266,900 psi
Thermal conductivity at 19°C	ASTM D 2717	0.167 J/sec/m/°C	0.167 J/sec/m/°C
Dielectric breakdown voltage	ASTM D 877	30 kV	30 kV

Quaker Chemical: industrial expertise and partnership on a global scale

Quaker Chemical Corporation is a worldwide developer, producer and marketer of custom-formulated chemical specialty products and a provider of fluid management services. For more than 80 years, Quaker has worked with leading manufacturers of steel, metals and automotive products, providing innovative products and process expertise to improve productivity.

Applications

- Quintolubric® 888 fluids were designed to replace anti-wear, mineral oil–based hydraulic fluids used in fire hazardous and environmentally sensitive hydraulic applications without compromising overall hydraulic system operation.
- Quintolubric® 888 does not contain water, mineral oil or phosphate ester.
- These fluids are based on high-quality, synthetic, organic esters and carefully selected additives to achieve excellent hydraulic fluid performance.
- Quintolubric® 888 hydraulic fluids are available in two viscosities, ISO VG 68 and 46, to meet all your hydraulic fluid requirements.

Safety

Fire resistance

- The Quintolubric® 888 Series hydraulic fluids are fire-resistant.
- In case of a fire, the product's self-extinguishing properties limit the spread of the fire.
- These fire resistance properties have been certified by Factory Mutual.

Toxicity

- Quintolubric® 888 is nontoxic, nonirritating and contains no hazardous ingredients.
- Country-specific Material Safety Data Sheets are available.

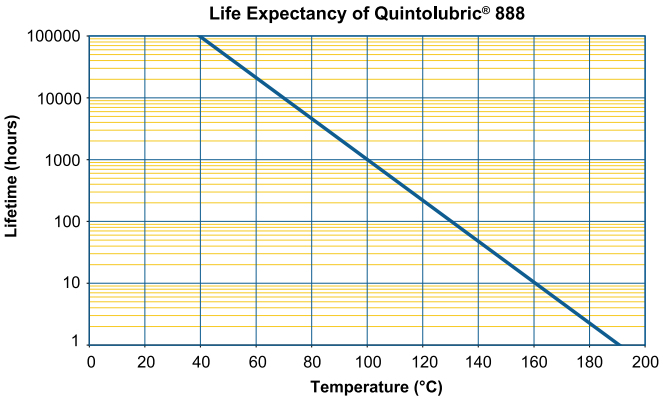
Environment

- Quintolubric® 888 fluids have a unique chemical structure that is readily biodegradable and nontoxic to aquatic life.
- Quintolubric® 888 fluids float on water and are not water-soluble. The fluid can be removed from collection systems by standard skimming techniques.

Performance

Lifetime

- Properly maintained, Quintolubric® 888 has a useful life comparable to that of mineral oil fluids. Specific fluid lifetime depends primarily on temperature as shown in the graph.



Lubrication

- Quintolubric® 888 offers the lubrication level of premium, anti-wear hydraulic oils.
- Quintolubric® 888 can be used with hydraulic components from all major manufacturers.

References

- For over 30 years, Quintolubric® brand synthetic fire-resistant fluids have been used around the world in demanding hydraulic applications. More than 10,000 systems are running these fluids today.

Material Compatibility

Elastomers

- The chart contains our recommendations regarding the use of Quintolubric® 888 with commonly used elastomers. Three categories of elastomer applications are listed. “Static” refers to trapped nonmoving seals such as O-rings in valve subplates and rigid, low pressure hose connections. “Mild-Dynamic” applications include accumulator bladders and hose linings where the hoses are exposed to high pressure and light flexing. “Dynamic” refers to cylinder rod seals, pump shaft seals and constantly flexing hydraulic hose.

Elastomer Compatibility

ISO 1629	Description	Static	Mild-Dynamic	Dynamic
NBR	Medium to high nitrile rubber (Buna N, >30% acrylonitrile)	C	C	C
NBR	Low nitrile rubber (Buna N, <30% acrylonitrile)	S	N	N
FPM	Fluoroelastomer (Viton®)	C	C	C
CR	Neoprene	S	S	S
IIR	Butyl rubber	S	N	N
EPDM	Ethylene propylene rubber	N	N	N
AU	Polyurethane	C	C	C
PTFE	Teflon®	C	C	C

C = Compatible

S = Satisfactory for short-term use, but replacement with a completely compatible elastomer is recommended at the earliest convenience

N = Not compatible

Metals

Quintolubric® 888 is compatible with iron and steel alloys and most nonferrous metals and their alloys. Quintolubric® 888 is not compatible with lead, cadmium, zinc, and alloys containing high levels of these metals. Suitable substitutes for these materials are available and should be used.

Paints and coatings

Quintolubric® 888 is compatible with multicomponent epoxy coatings. Quintolubric® 888 is not compatible with zinc-based coatings. Specific coating and application recommendations can be obtained from coating manufacturers or directly from Quaker Chemical.

Conversion Procedures

Mineral oil–based fluids

Quintolubric® 888 fluids are miscible and compatible with nearly all mineral oil–type hydraulic fluids. To convert a system using these types of fluids, simply drain and recharge with Quintolubric® 888. For proper fire resistance, at least 95% of the oil-based fluid should be removed.

Water glycol (HFC) and invert emulsions (HFB)

Quintolubric® 888 fluids are not miscible or compatible with water-containing fluids and these fluids must be removed from the system. Remove most of the fluid by draining the reservoir and lines. Remove residual fluid by circulating Quintolubric® 888 and draining. Refill with fresh fluid. Repeat until residual fluid is less than 1% of system volume.

Phosphate ester

Quintolubric® 888 fluids are compatible with some, but not all phosphate esters. Testing prior to conversion is recommended. Please contact Quaker Chemical for testing and conversion recommendations.

Service

Quaker Chemical has an international staff of process engineers and fluid power specialists available for quick and professional service. Services include hydraulic system surveys, conversion recommendations, and system monitoring. We recommend a program of regular fluid analysis (no less than twice per year). Fluid analysis services are available directly from Quaker Chemical. Our goal is to provide a safe, cost-effective and high-performance hydraulic fluid with maximum fluid life expectancy.