

Product Bulletin

supresta™
BUILT-IN DEFENSE

Fyrquel® Electro-Hydraulic Control Fluids



Overview

Fyrquel® Electro-Hydraulic Control Fluids are phosphate ester based fire-resistant fluids formulated with trixylenyl and or butylated phenyl phosphates. The fluids are in the class of “non aqueous hydraulic fluids” sometimes referred to as “synthetic fire resistant fluids”. Fyrquel® fluids are both extremely difficult to ignite and inherently self extinguishing. Other type synthetic fluids are not self extinguishing. Critical equipment should use self extinguishing fluids to get the highest level of protection from leaking fluid fires. Visit www.supresta.com to see a comparison of fire-resistant fluids. The fluids offer:

- Highest fire resistance;
- Inherent self extinguishing property;
- High oxidative and thermal stability;
- Good hydrolytic stability;
- Excellent lubrication properties; and
- Rated easily biodegradable.

Product Mixing

The Fyrquel® products listed in the above box are fully miscible with each other and may be mixed or topped off in the same reservoir. However, when upgrading to a newer generation fluid, we recommend a total fluid change to receive

Fyrquel® Product Selector

Fyrquel® EHC meets or exceeds GE, Westinghouse, Alstom/ABB, and most other EHC equipment OEMs. Fyrquel® EHC-N meets or exceeds Siemens, Alstom/ABB specifications for a trixylenyl phosphate product with low air release time. Fyrquel® EHC-S has been traditionally recommended for higher temperature service.

Fyrquel® Series

First Generation	Fyrquel® EHC-N	Trixylenyl phosphate (TXP)
Second Generation	Fyrquel® EHC	Trixylenyl phosphate (TXP) and Butylated phenyl phosphates
Second Generation	Fyrquel® EHC-S	Butylated phenyl phosphates (Higher Temperature Service)

the full benefit of the new fluid. This will also allow cleaning of the reservoir prior to the change. The only two exceptions to this guideline would be mixing a degraded fluid, identified by a >0.20 TAN fluid acidity condition, with new fluid. The first exception is when performing a corrective partial fluid change to a reservoir containing degraded fluid—the same product should be used for the partial re-fill. The second exception is when performing a total fluid change replacing degraded fluid—the system should first be cleaned to remove built-up contamination prior to refilling with the third generation fluids.

Maintenance & Handling

Fyrquel® products are easily maintained in like new, clean condition using standard off line chemical filtration and the FyrCheck Routine Fluid Analysis service available on request, along with other service assists from experienced field representatives. The new generation fluid products feature equal or better stability for continued long service life. Refer to Supresta Material Data Sheets (MSDS) for additional information, storage, handling, and transport guidelines. A review of the MSDS will show Fyrquel® products with a low degree of hazard when used as intended.

Fyrquel® Electro-Hydraulic Control Fluids

Typical Properties

Appearance	clear, transparent liquid
Viscosity	
at 37.8°C (100°F) cST (SUS)	47 (220)
at 98.9°C (210°F) cST (SUS)	5 (43)
ISO Grade	46
Viscosity Index	0
Specific Gravity @ 60/60° F	1.145
Pour Point , °C (°F)	-18 (0)
Water Content, wt. %	0.10 max
Chlorine Content, ppm (micro coulometry)	50 max
Acid Number, mg KOH/g	0.05
Foaming, (ASTM D-892-72), mL.	25
Color, ASTM	1.5
Particle Distribution (SAE A-6D, tentative)	ISO 15/12 Class 3
Resistivity (OHM/cm)	12.0 x 10 ⁹
Air Entrainment, Minutes,	<=5 minutes

Engineering Design Data

Evaporation Loss, wt. % (22 hrs @ 300° F)	1.50
Coefficient of Thermal Expansion @ 100° F (MI/MI/°F)	0.0003
Surface Tension (dynes/cm) @ 68° F	42
Heat of Combustion (btu/lb)	13,459
Specific Heat (cal/g °C)	
0°C	0.3523
38°C	0.3762
100°C	0.4101
Thermal Conductivity (cal-cm/sec/cm ³ °C)	
40°C	3.04 x 10 ⁻⁴
94 °C	3.04 x 10 ⁻⁴
146 °C	2.95 x 10 ⁻⁴

Latent Heat

24.7 kcal/mole
60.3 cal/g
108.8 BTU/lb.

Vapor Pressure (mm Hg ABS)

420 °F	0.08 mm Hg ABS
430 °F	0.50 mm Hg ABS
450 °F	1.20 mm Hg ABS

Lubricity Data

Shell 4-Ball Test

1 kg, load, Scar dia. mm., avg.	0.19
10 kg load, Scar dia. mm., avg.	0.38
40 kg. load, Scar dia. Mm., avg.	0.48

V-104C Vickers Vane Pump Test (ASTM D-2882)

Ring Wear, grs. cumulative

24 hours	0.0037
100 hours	0.0043

Vane Wear, grs. cumulative

24 hours	0.0030
100 hours	0.0085

"FALEX" Lubrication Test (ASTM D-2625)

Wear Test (ASTM-D-2670) 0.0105 scar width, in.

Extreme Pressure Test (ASTM D-2625)

Transition Load	1,500 lbs.
Transition Pressure	101,000 psi.

"TIMKEN" Lubrication Test (ASTM D-2714)

Wear Test 1.25 scar width, mm

Extreme Pressure Test

O.K. Load	55 lbs.
Pressure at O.K. Load	26,250 psi

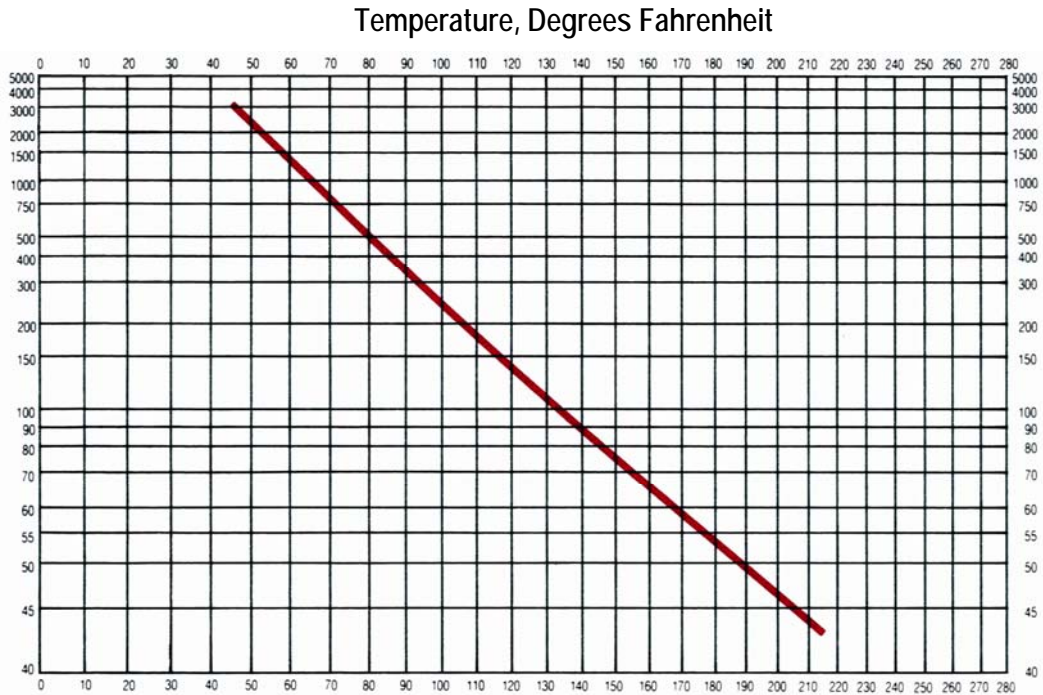
Safety & Handling

Consult the Material Safety Data Sheet for these products.

Shipping Information

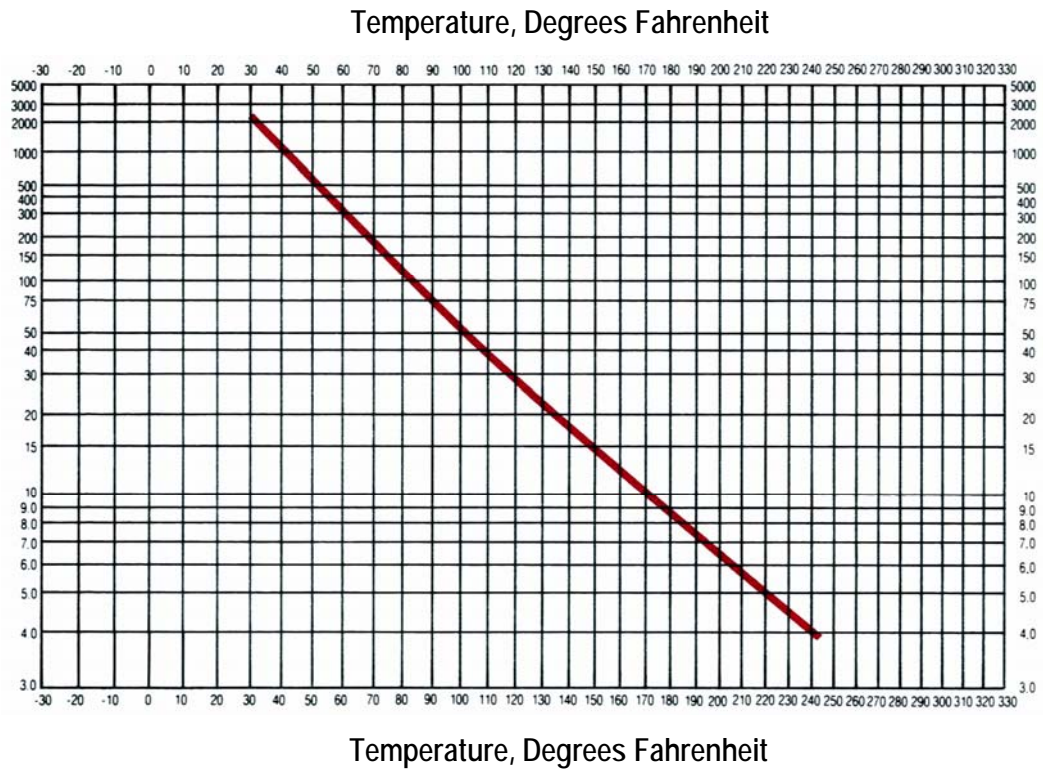
Available 55 gallon/208 liter drums.

Viscosity, Saybolt Universal Seconds



Viscosity, Saybolt Universal Seconds

Kinematic Viscosity, Centistokes



Kinematic Viscosity, Centistokes

Temperature, Degrees Fahrenheit