

Product Bulletin

Fyrquel® EHC S Electro-Hydraulic Control Fluid

OVERVIEW

Fyrquel® EHC S is a t-butylated triaryl phosphate ester self-extinguishing (fire-resistant) electro-hydraulic control fluid product. The International Standards Organization (ISO) classifies phosphate ester fluids as HFDR class. HFDR phosphate ester class fluids are water-free fluids that are both extremely difficult to ignite and inherently self-extinguishing. Other types of synthetic fluids are not self-extinguishing and are separately classified by ISO as HFDU class. Steam turbine operators should use self-extinguishing HFDR class phosphate ester Fyrquel® fluids to get the highest level of protection from the risk of leaking fluid fires. Fyrquel EHC S is approved by FM Global against Standard 6930, ASTM D 4293, ISO standard 12922 and exceeds all major OEM requirements. Visit www.fyrquel.com to review the full range of Fyrquel® product choices and to view a short video that easily shows the self-extinguishing advantage of Fyrquel® phosphate ester fluids.

PRODUCT MIXING

Fyrquel® EHC S is fully mixable and interchangeable with other Fyrquel® EH series products and may be mixed or topped off in the same reservoir.

MAINTENANCE & HANDLING

Fyrquel® EHC S can be maintained in good condition by keeping the fluid dry, away from sources of overheating and by maintaining a low fluid acidity using standard off line chemical filtration. The Fyr-Check® Fluid Analysis service program is available on request along with other service assists from experienced technical representatives. Refer to Safety Data Sheets (SDS) for additional information, storage, handling, and transport guidelines.

TYPICAL PROPERTIES

		Test Method
Appearance	clear, transparent liquid	
Viscosity		ASTM D 445
at 40°C, cSt	44.5	
at 100°C, cSt	5.4	
Viscosity Index	0	
Specific Gravity @ 20°C	1.145	ASTM D 1298
Pour Point, °C	-18 (0)	ASTM D 97
Water Content, wt. %	0.05	ASTM E 203
Chlorine Content, ppm	20	microcoulometry
Acid Number, mg KOH/g	0.04	ASTM D 974
Foaming		ASTM D-892-72
Tendency	10 mL	
Stability	0	
Color, ASTM	1.0	ASTM D 1500
Particle Distribution	ISO 15/12	ISO 4406
(SAE A-6D, tentative)	Class 3	
Resistivity (OHM/cm)	20.0 x 10 ⁹ min	IEC 247
Air Entrainment, Minutes,	< 5.5	ASTM D 3427
Flash point, °C	240	ASTM D92
Hot manifold ignition, °C	>740	ISO 20823

Note that these Typical Properties are not Sales Specifications. Sales specification values are available upon request. Actual values are confirmed by Certificate of Analysis at the time of shipment.

ENGINEERING DESIGN DATA

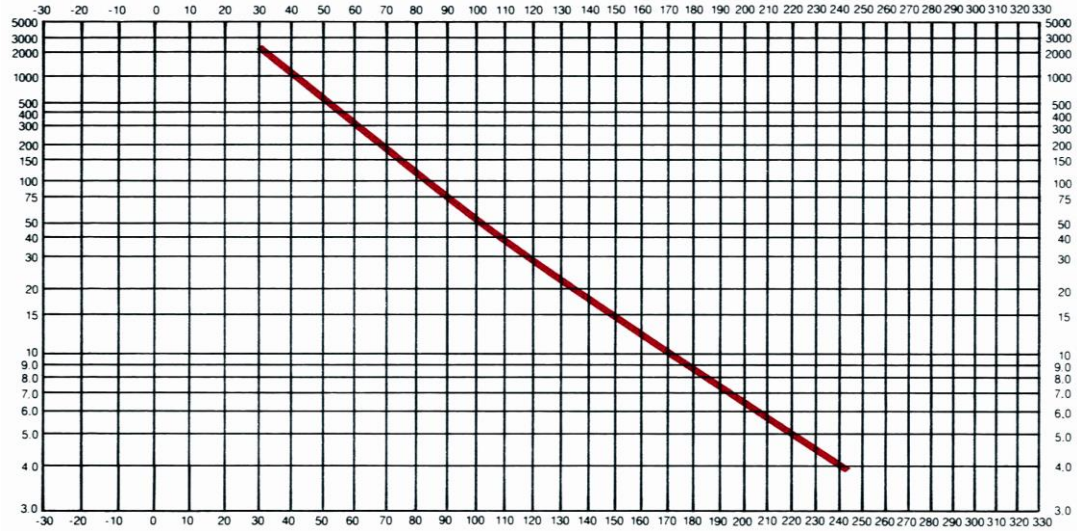
Evaporation Loss, wt. % (22 hrs @ 149°C)	1.50
Coefficient of Thermal Expansion @ 40°C (ml/ml/°C)	0.0005
Surface Tension (dynes/cm) @ 68° F	42
Heat of Combustion (cal/g)	7,483
Specific Heat (cal/g °C)	
0°C	0.3523
38°C	0.3762
100°C	0.4101
Thermal Conductivity (cal-cm/sec/cm ³ /°C)	
40°C	3.04 x 10 ⁻⁴
94 °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
FZG gear test	
Failure load stage	8

Temperature, Degrees Fahrenheit

**Kinematic
Viscosity,
Centistokes**



SAFETY & HANDLING:
SHIPPING INFORMATION:

Consult the Safety Data Sheet for these products.
55 gallon/208 liter drums.

Visit www.fyrquel.com to review product choices and Fyrquel® contact information.

All information concerning this product and/or suggestions for handling and use contained herein are offered in good faith and are believed to be reliable as of the date of publication. However, no warranty is made as to the accuracy of and/or sufficiency of such information and/or suggestions as to the merchantability or fitness of the product for any particular purpose, or that any suggested use will not infringe any patent. Nothing herein shall be construed as granting or extending any license under any patent. Buyer must determine for itself, by preliminary tests or otherwise, the suitability of this product for its purposes, including mixing this product with other products. The information contained herein supersedes all previously issued bulletins on the subject matter covered.