

Product Bulletin

Fyrquel[®] EHC

Electro-Hydraulic Control Fluid

OVERVIEW

Fyrquel[®] EHC is a second generation trixylyl and t-butylated phenyl phosphate ester self-extinguishing (fire-resistant) electro-hydraulic control fluid product that was originally developed in the 1970s, produced from then best available raw materials. ICL recommends that users of this 2nd generation fluid consider easily switching to the modern 3rd generation phosphate ester fluid that is produced from newer raw materials that features a more sustainable product design that is trixylyl phosphate-free. Both the old and the modern phosphate ester Fyrquel[®] fluids are self-extinguishing (fire resistant) fluids. 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. 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.

FYRQUEL[®] EHC OEM APPROVALS

Fyrquel[®] EHC meets or exceeds GE, Westinghouse, Alstom/ABB, Siemens, and most other EHC equipment OEMs. For further information please contact your Fyrquel[®] Representative.

PRODUCT MIXING

Fyrquel[®] EHC is fully mixable and interchangeable with later generation Fyrquel[®] EH series products and may be mixed or topped off in the same reservoir.

MAINTENANCE & HANDLING

Fyrquel[®] EHC is easily maintained in near original condition for long service life 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

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	20
(micro coulometry)	
Acid Number, mg KOH/g	0.04
Foaming, (ASTM D-892-72), mL.	10
Color, ASTM	1.5
Particle Distribution	ISO 15/12
(SAE A-6D, tentative)	Class 3
Resistivity (OHM/cm)	20.0 x 10 ⁹ min
Air Entrainment, Minutes,	< 7 minutes

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

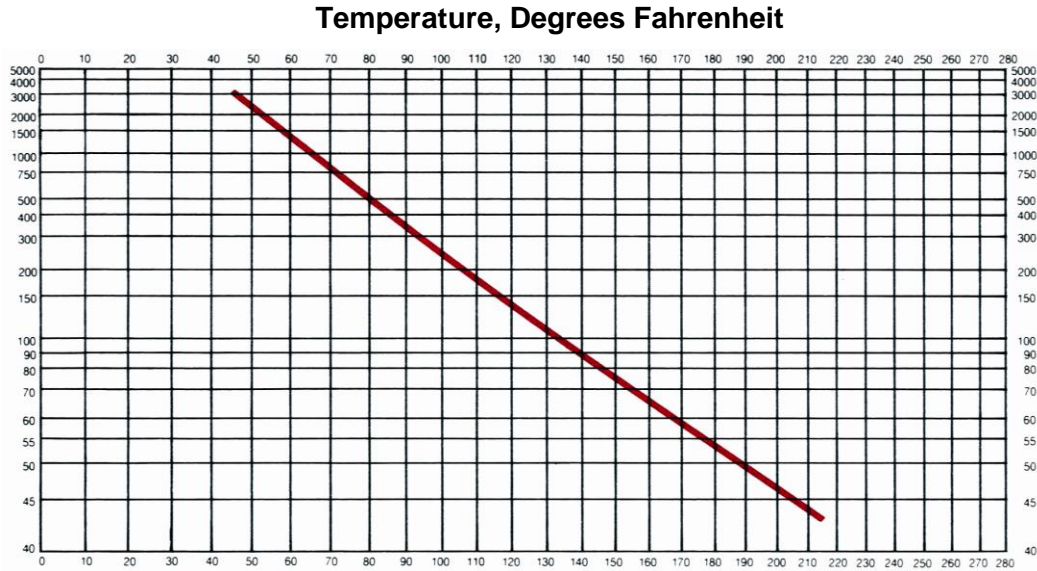
Evaporation Loss, wt. % (22 hrs @ 300° F)	1.50
Coefficient of Thermal Expansion @ 100° F (MI/MI/°F)	0.0003
Surface Tension (dynes/cm) @ 68° F	42
Heat of Combustion (btu/lb)	13,459
Specific Heat (cal/g °C)	
0°C	0.3523
38°C	0.3762
100°C	0.4101
Thermal Conductivity (cal-cm/sec/cm ³ /°C)	
40°C	3.04 x 10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

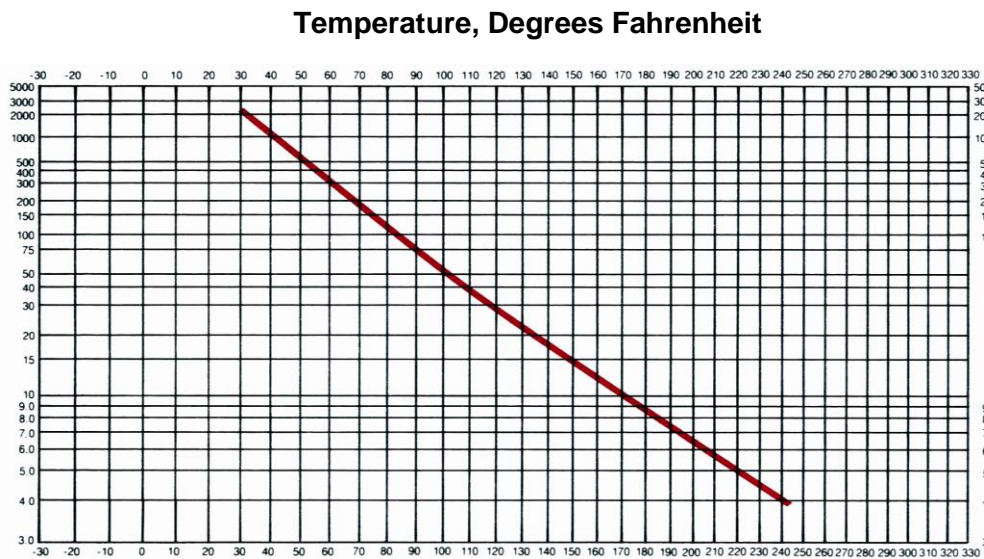
Shell 4-Ball Test	
1 kg. load, Scar dia. mm., avg. 0.19	
10 kg. load, Scar dia. mm., avg. 0.38	
40 kg. load, Scar dia. mm., avg. 0.48	
V-104C Vickers Vane Pump Test (ASTM D-2882)	
Ring Wear, grs. cumulative	
24 hours	0.0037
100 hours	0.0043
Vane Wear, grs. cumulative	
24 hours	0.0030
100 hours	0.0085
“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 Safety Data Sheet for these products.
SHIPPING INFORMATION: 55 gallon/208 liter drums.

**Viscosity, Saybolt
Universal Seconds**



**Kinematic
Viscosity,
Centistokes**



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.