HYDRANSAFE FR EHC

Lubrication

High performance fire-resistant phosphate ester based hydraulic fluid.

APPLICATIONS

Hydraulic systems

- **HYDRANSAFE FR EHC** is a high performance, fire resistant hydraulic fluid based on selected phosphate esters and designed for hydraulic circuits which require the use of safety fluids.
- **HYDRANSAFE FR EHC** is especially designed for use in electrohydraulic governor systems of steam turbines, including systems using fine tolerance servo valves.
- Working temperature : - 10 to + 120°C.

SPECIFICATIONS

International Standards

- ISO 12922 - HFDR
- ASTM 4293 – HFDR

OEM

- ALSTOM HTGD 690 149
- GEK 46357
- SIEMENS KWU – TLV 9012 03

ADVANTAGES

HYDRANSAFE FR EHC is a fluid free of water which displays superior fire resistance properties (ISO Standard 12922). It has an excellent overall performance in hydraulic circuits and hydraulic governor systems of steam turbines according to OEM requirement :

- Good lubrication performance and anti-wear properties
- Excellent oxidation stability
- Low volatility
- Prevention of foaming and very quick air release
- Good resistance to hydrolysis and very quick demulsibility
- Excellent shear stability
- Good filterability.

SPECIAL INSTRUCTIONS

HYDRANSAFE FR EHC is not miscible with conventional hydraulic mineral oils or with water-glycol fluids. However HYDRANSAFE FR EHC can generally be mixed in any proportion with phosphate ester based fluids.
Certain precautions must be taken when using HYDRANSAFE FR EHC especially in an equipment designed to be used with a mineral oil:

- Seals and hoses : these fluids are not compatible with conventional elastomers. Use only fluorinated elatomers (Viton – Teflon).
- Paints : HYDRANSAFE FR EHC will cause normal paints to dissolve or swell. It is best to avoid using paints on tanks (special resins are available that are compatible with phosphate esters).

As a general rule we recommend that the user consult AFNOR E 48-640 on “How to use fire-resistant fluids”.

PHYSICAL PROPERTY	UNIT	TYPICAL VALUE	TEST METHOD
Color		1	ASTM D 1500
Kinematic viscosity - at 100 °C - at 40 °C - at 0 °C	CsT	 5.4 44.5 1676	ISO 3104
Specific gravity at 20 °C		1.15	ISO 3675
Pour point	°C	- 24	ISO 3016
Acid number	mg KOH/g	0.05	ISO 6619
Chlorine content	ppm	6	Microcoulometric
Water content	% w/w	0.04	ISO 760
Volume resistivity at 20 °C	Mohm m	450	IEC 60247
Particulate contamination		-/15/12	ISO 4406
Foaming at 24 °C - tendancy - stability	 Ml	 10 0	ISO 6247
Air release at 50 °C	min	5.5	ISO 9120
Water separation	min	5	ISO 6614

LUBRICATION PERFORMANCE PROPERTY	UNIT	TYPICAL VALUE	TEST METHOD
Vickers Vane Pump Test - ring weight loss - vane weight loss - total weight loss	 mg	 11.6 4.9 16.5	ISO 20763
4-Ball Wear Test wear scar diameter	 mm	 0.52	ASTM D4172
FZG gear test			DIN 51354 part 2
failure load stage		8	
specific weight loss	mg/kWh	0.24	

FIRE RESISTANCE PROPERTY	UNIT	TYPICAL VALUE	TEST METHOD
Flash point (open cup)	°C	262	ASTM D 92
Fire point (open cup)	°C	354	ASTM D 92
Auto-ignition temperature - Method A - Method B	 °C °C	 540 534	 DIN 51794 ASTM E 659
Wick ignition - Maximum persistence	 S	 0.7 (pass)	 ISO 14935
Spray ignition - spray flammability parameter - maximum persistence of burning Spray ignition stabilised - ignitability grade flame length grade	 S 	 Group I 8 (pass) Class F Class D	 FM Global 6930 ISO 15029-1 ISO 15029-2
Hot Manifold ignition	°C	No flashing or burning on tube at 726 (pass)	ISO 20823

STABILITY PROPERTY	UNIT	TYPICAL VALUE	TEST METHOD
Oxidative stability Method A Acid value change Metal weight changes Iron Copper Method B Viscosity change at 40 °C Acid value change Method C Time to 175 kPa pressure drop	 mg KOH/g mg % mg KOH/g Min	 0.05 - 0.1 - 0.1 1.5 0.05 216	 DIN EN 14832 FTM 791-5308.7 ASTM D 2272
Hydraulic stability Method A Acid value change - in fluid - in water Method B Acid value change - in fluid - in water Copper weight change	 mg KOH/g mg KOH/g mg/cm^2	 + 0.27 +0.46 + 0.13 + 0.17 0.04	 DIN EN 14833 ASTM D 2619

Above characteristics are mean values given as an information.