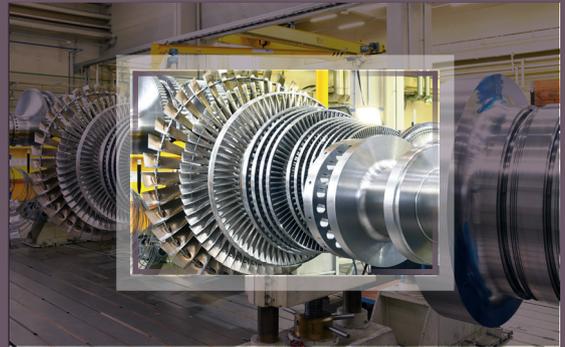


# HYDRANSAFE FR EHC



High performance fire-resistant phosphate ester based hydraulic fluid (HFDR) for steam turbine EHC systems



## APPLICATIONS

**HYDRANSAFE FR EHC** is a high performance, fire resistant hydraulic fluid based on selected phosphate esters (ISO 12922 HFDR) and designed for hydraulic circuits which require the use of safety fluids.

It is exempt of tri xylol phosphate (TXP).

**HYDRANSAFE FR EHC** is specially designed for use in electro-hydraulic governor systems of steam turbines, including systems using fine tolerance servo valves.

## SUPERIOR FIRE RESISTANCE

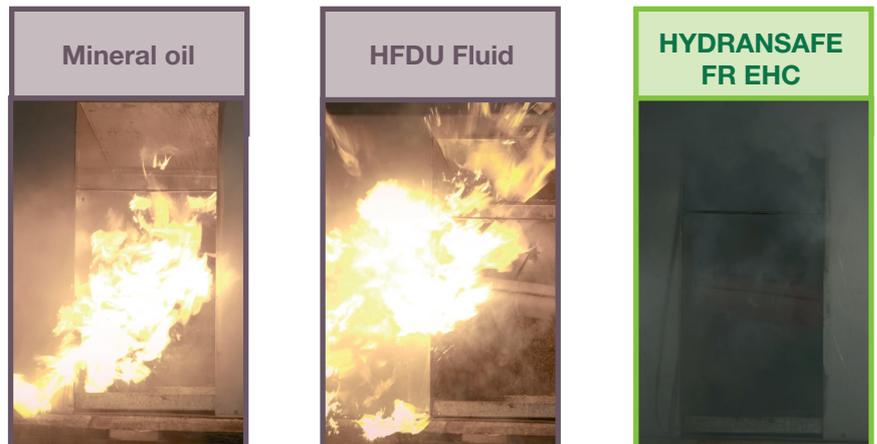
The ignition is limited with **HYDRANSAFE FR EHC** compared to mineral oils or HFDR Fluids.



**Spray Ignition Test (DIN ISO 15029-1)** : In this test, a fire source is applied on an oil spray.

## CUSTOMER BENEFITS

- ✓ Reduces dramatically the risk of fire
- ✓ Protects operators health
- ✓ Provides extended lifetime



**ISO 20823 Hot Manifold Ignition Test at 600 °C** : In this test, an oil leak on a hot spot of 600°C is simulated.

## TECHNICAL DATA - HYDRANSAFE FR EHC

CHARACTERISTICS	METHODS	UNITS	TYPICAL VALUES
Colour	ASTM D 1500	-	L 1.0
Kinematic viscosity			
- at 100 °C			5.4
- at 40 °C	ISO 3104	cSt	44.5
- at 0 °C			1676
Specific gravity at 20 °C	ISO 3675		1.15
Pour point	ISO 3016	°C	-24
Flash Point	ISO 2592	°C	262
Fire point	ISO 2592	°C	364
Self Ignition Temperature	ASTM E 659	°C	534
Acid number	ISO 6619	mg KOH/g	0.05
Chlorine content	Microcoulometric	ppm	6
Water content	ISO 760	% w/w	0.04
Volume resistivity at 20 °C	IEC 60247	Mohm.m	450
Particulate contamination	ISO 4406	-	-/15/12
Foaming at 24 °C			
- Tendency	ISO 6247	mL / mL	10
- Stability			0
Air Release	ISO 9120	min	5.5
Water Separation	ISO 6614	min	5

### SPECIFICATIONS AND APPROVALS

- ✓ ISO 12922 HFDR
- ✓ ASTM 4293 HFDR
- ✓ ALSTOM HTGD690149 P
- ✓ GE-GEK 120329, 46357
- ✓ MHPS CL-004
- ✓ SIEMENS TLV 9012 03
- ✓ FACTORY MUTUAL
- ✓ PMUC

### SAFER FOR OPERATORS

As opposed to tri xylyl phosphate (TXP) containing fluids, HYDRANSAFE FR EHC is not considered as carcinogenic, mutagenic, reprotoxic (CMR) - category 1B.

Product	CMR Classification
TXP – based Fluids	
HYDRANSAFE FR EHC	Not classified

### COMPATIBILITY

This product is miscible and compatible with any other phosphate ester HFDR type fluid, like HYDRANSAFE FR NSG 38.

### SHELF LIFE

Shelf life of unopened packages is 2 years.

### STORAGE

Store the product away from humidity at temperatures not exceeding 35°C.

TOTAL LUBRICANTS  
INDUSTRY  
09-11-2018  
HYDRANSAFE FR EHC

This lubricant used as recommended and for the application for which it has been designed does not present any particular risk.  
A material safety data sheet conforming to the regulations in use in the E.C. is obtainable via your commercial adviser quick-fds.com.



**TOTAL**  
Committed to Better Energy