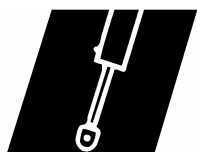


HYDRANSAFE FRS



Lubrication

Fire-resistant synthetic phosphate ester based hydraulic fluids.

APPLICATIONS

Hydraulic circuits

- Hydraulic installations operating in close proximity to potential ignition sources such as hot or molten metal and require the use of safer hydraulic fluids than the conventional petroleum oils : industries such as steel making, metal diecasting, coal mining, power generation or navy buildings.
- Working temperature : - 10 to + 70°C (+ 150°C : upper temperature limit for short-term operation).

SPECIFICATIONS

International specifications

- ISO 6743/4 - HFDR
- ISO 12922 - HFDR
- NFE 48-602 / 48-603 - HFDR

ADVANTAGES

HYDRANSAFE FRS are synthetic fluids free of water consisting of phosphate esters. They resist ignition under the most severe conditions and, even if ignited, will not continue to support combustion once the source of ignition is removed. Their excellent fire-resistance has been demonstrated by the results to the multiple specialized tests designed to reproduce these potential dangers :

- Fire point and autoignition temperature.
- Flow on red-hot metal
- Projection on fused metal
- Spray ignition tests

HYDRANSAFE FRS display excellent overall performance in hydraulic circuits :

- Excellent lubrication performance and anti-wear properties.
- Good thermal and oxidation stability.
- Low volatility.
- Prevention of foaming and quick air release.
- Good resistance to hydrolysis and quick demulsibility.
- Rust prevention (steel, aluminium, brass, zinc, cadmium, magnesium, copper).
- Excellent shear stability.
- Good filterability.



TOTAL

USE PRECAUTIONS

HYDRANSAFE FRS are not miscible with conventional hydraulic mineral oils or with water-glycol fluids. However **HYDRANSAFE FRS** can generally be mixed in any proportion with phosphate esters based fluids.

Certain precautions must be taken when using **HYDRANSAFE FRS** especially in an installation designed to accommodate a mineral oil :

- **Seals and hoses** : these fluids are not compatible with conventional elastomers. Use only fluorinated elastomers (Viton – Teflon).
- **Paints** : **HYDRANSAFE FRS** 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”.

TYPICAL CHARACTERISTICS	METHODS	UNITS	HYDRANSAFE FRS	
			32	46
Appearance	Visual	-	Clear	
Density at 15°C	ISO 3675	Kg/m ³	1143	1121
Kinematic viscosity at 40°C	ISO 3014	mm ² /s	32.3	43.0
Kinematic viscosity at 100°C	ISO 3014	mm ² /s	4.7	5.3
Neutralization Number	ISO 6619	mgKOH/g	0.05	0.05
Pour Point	ISO 3016	°C	- 22	- 18
Water Content	ISO 760	%	< 0.06	< 0.06
Foaming				
Seq. 1	ISO 6247	ml/ml	20 / 0	20 / 0
Seq. 2		ml/ml	20 / 0	20 / 0
Seq. 3		ml/ml	20 / 0	20 / 0
Fire Resistance Properties				
Flash Point OC	ISO 2592	°C	240	245
Fire Point	ISO 2592	°C	330	335
Autoignition Temperature	ASTM D2155	°C	570	545
Spray Test	VII Lux. § 3.1.2.	s (cotation)	6 (passe)	6 (passe)
Persistence of burning				
Spray test	VII Lux. § 3.1.3.	class	-	E
Ignitability Index Class				
Spray Test	Factory Mutual standard Std 6930	s (cotation) Group	6 (passe) Group 1	6 (passe) Group 1
Persistence of burning				
Spray Flammability Parameter (SFP)				
Wick Ignition	ISO 14935	s (cotation)	9 (passe)	9 (passe)
Persistence of burning				
Hot Manifold test at 704°C	ISO 20823	cotation	passe	passe

Above characteristics are mean values given as an information.

TOTAL LUBRIFIANTS
Industrie & Spécialités

20-10-2003 (supersedes 17-07-2003)

HDRANSAFE FRS

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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. can be obtained from your local commercial adviser or down loaded from www.quick-fds.com