



## Foodmax FRF

### Food grade fire resistant HFDU hydraulic fluid

#### Description

Foodmax FRF is a synthetic food grade fire resistant hydraulic fluid that has been formulated to provide both fire resistance and excellent lubrication. Unlike most water glycol based formulations, Foodmax FRF is easy to maintain, has an exceptionally long fluid life, and offers superior pump protection. No special change out procedures are necessary to switch from a standard mineral oil hydraulic fluid to Foodmax FRF, and unlike water glycol formulations, pump deration is not required.

Foodmax FRF meets USDA H-1 requirements for lubricants with incidental food contact (FDA 21 CFR 178.3570). Its exceptional oxidative stability, corrosion resistance, and anti-wear properties make Foodmax FRF particularly well suited for applications where other fire resistant fluid technologies are restricted.

#### Fire resistance

Foodmax FRF has a very low burn efficiency (how easy the fluid is to ignite) and has a high flash point. Foodmax FRF will resist ignition when subjected to a high pressure hydraulic leak, resulting in a significant reduction in fire hazard. Unlike water glycol based formulations Foodmax FRF, does not require constant monitoring to maintain fire resistance.

	Foodmax FRF 46	Esso Nuto H-32 (mineral)	Food grade water glycol	Synthetic PAG
Fire resistance	Yes	No	Yes	Yes
Flash point °C	246	212	n/a	274

The high flashpoint of the synthetic PAG formulation is most likely due to the initial water content of the fluid. Although not designed to be mixed with water, the PAG base fluids typically have a higher initial water content than other synthetic bases. Water in any fluid will generally raise the flash point, but as the water evaporates the flash point returns to normal. The typical flash point of a used PAG is 227 °C .

#### Seal Compatibility

Foodmax FRF offers excellent seal compatibility:

	Foodmax FRF 46	Esso Nuto H-32 (mineral)	Food grade water glycol	Synthetic PAG
Seal compatibility	Excellent	Excellent	Fair	Fair



## Typical performance data

	Test method	FRF
Viscosity Index	ASTM D2270	115
Viscosity @ 40 °C, cSt	ASTM D445	50.0
Viscosity @ 100 °C, cSt	ASTM D445	7.5
Flash point, °C	ASTM D92	246
Auto ignition point, °C	ASTM E-659-78	393
Pour point °C	ASTM D97	<-20
4-ball wear test, 40 kg, 1200 RPM, 75 °C, 1 hr , scar dia, mm	ASTM D4172	0.35
FZG, 1760 rmp, 90 °C, 40 kg load, # passes	DIN51254	12+
Rust test	ASTM D665	
• Distilled water		Pass
• Sea water		Pass
Conradson carbon residue, % weight	ASTM D189	0.01
Demulsibility @ 54 °C, 30 min	ASTM D1401	40/40/0
Rexroth 1,100 hr endurance test (2,600 rpm, 185°C, 380 bar)	MNF SPEC	Pass
Vickers 104C vane pump test, mg wear	ASTM D2882	<5
Vickers 35VQ25	M-2950-S	Pass
Filter requirement		Cellulose or micro glass
Copper corrosion	ASTM D130	1a
Oxidation Inhibition (turbine oil stability test), hr	ASTM D943	>10.000

All performance data on this Technical Data Sheet are indicative only and can vary during production

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