

Castrol Anvol SWX 46 FM

Fire resistant hydraulic fluids

Description

Castrol Anvol™ SWX 46 FM and SWX 68 FM are HFDU Polyol ester type hydraulic fluids as defined by ISO 6734/4 and ISO 12922 (1). They are fully approved by FM Global (Factory Mutual) as industrial Fire Resistant Hydraulic Fluids. The Anvol SWX FM range is outstanding in their category in providing a safe working environment, improved system reliability and biodegradability.

Application

Formulated to work in high-pressure hydraulic systems up to 7500 psi. Anvol SWX FM provides gear, vane and piston pumps with protection against wear equivalent to that of mineral oils.

Anvol SWX FM is designed to combine fire resistance with superior system reliability and a reduced tendency to form varnish or sludge in valves, pipes and reservoirs. It also provides greater resistance to water by offering high levels of corrosion protection. Even in the harshest steel mill environment, Anvol SWX provides safety, protection and reliability. This has the added value of reducing failures and minimising unscheduled downtime.

Anvol SWX FM is used in areas of the manufacturing industry where there is high risk of fire such as hot strip mills, coil handling facilities, pipe mills and continuous casters. The risk is minimized by Anvol SWX FM's high fire point and a low heat of combustion.

Anvol SWX FM fluids are compatible with Acrylonitrile-butadiene rubbers (NBR), hydrogenated NBR and fluorocarbon rubbers (FKM). The Seal Compatibility Index (IP278) for Anvol SWX FM is comparable to mineral oils.

Anvol SWX FM is classified as follows:
ISO 6743/4 – Hydraulic Oils Type HFDU

Anvol SWX FM grades meet the requirements (for appropriate viscosity grade) of:
Oilgear Towler
Bosch Rexroth
FM Global 6930 Approved (FM Standard 6930 Jan 2002 Category 1)

Advantages

- High fire point: provides superior fire resistance characteristics, creating a safer working environment and greater equipment protection
- Shear stable: maintains viscosity and fire resistant properties during use
- Advanced corrosion inhibition: protects ferrous components from residual water and leads to extended equipment life and reduced downtime
- Excellent resistance to oxidation and thermal degradation: reduces sludge and varnish and prevents valve sticking – ensuring longer system life and longer drain periods
- Superior anti-wear performance: passes 12+ FZG stages and delivers excellent wear protection therefore reduces downtime from unscheduled maintenance
- Inherently biodegradable: well suited for applications where inadvertent environmental contamination might occur due to leakage

(1) per ISO 6743/3 and ISO 12922:1999/Corrigendum 1:2001(E), these are classified as synthetic fluids free of water, but of other composition than HFDR (Phosphate Ester)}.

Typical Characteristics

Test	Method	Units	SWX 46 FM	SWX 68 FM
ISO Viscosity Grade	-	-	46	68
Density @ 15°C	ISO 12185/ ASTM D4052	g/ml	0.89	0.89
Viscosity @ 40°C	ISO 3104/ ASTM D445	mm ² /s	48	67.8
Viscosity @ 100°C	ISO 3104/ ASTM D445	mm ² /s	9.5	12
Viscosity Index	ISO 2909/ ASTM 2270	-	187	176
Demulsibility– Steam	IP19	Secs	400	400
Water Separability @ 54°C	ISO 6614/ ASTM D1401	Mins	25	25
Rust Test (24 hrs synthetic sea water)	ISO 7210/ ASTM D665B	-	Pass	Pass
Fire Point, COC	ISO 2592/ ASTM D92	°C/°F	372/701	374/705
Flash Point, COC	ISO 2592/ ASTM D92	°C/°F	268/514	298/568
Autoignition temperature	ASTM E659	°C/°F	430/806	430/806
Pour Point	ISO 3016/ ASTM D97	°C/°F	-33/-27	-30/-22
Foaming Sequence I Sequence II Sequence III	ISO 6247/ ASTM D892	mls/mls	0/0 80/0 0/0	10/0 100/0 20/0
TAN	ISO...../ ASTM D974	mgKOH/g	1.4	1.3
Factory Mutual SFP	FM Standard 6930	-	5.0 x 10 ⁴	4.7 x 10 ⁴
Air Release Value	ISO 9120/ ASTM D3427	mins	<0.5	3.9
RPVOT oxidation	ASTM D2272	mins	232	227
Viscosity @ 100°C after 20 hours shear	DIN 51350 T6	% loss	0.6	0
FZG fail stage (A8.3/90)	ISO 14635-1/ DIN 51354	-	12 +	12+
Biodegradability @ 28 days	OECD 301 B	%	87	75
ISO Designation	6734/4	-	HFDU	HFDU

Additional Information

Anvol SWX FM does not use polymeric materials. Polymeric material can shear in service, leading to a loss of the claimed spray test performance and a reduction in viscosity.

A risk assessment should always be carried out whenever there is a need to select any type of fire resistant hydraulic fluid, based on factors such as the potential sources of ignition, fire prevention measures in place and potential consequences of a fire.

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Castrol Limited, Pipers Way, Swindon, Wiltshire SN3 1RE, UK
www.castrol.com/industrial