Product Data

Anvol PE 46 B

Fire resistant hydraulic oil

Description

Castrol Anvol™ PE 46 B is a high performance fire resistant hydraulic fluid which is primarily intended for use in steam turbine governor and boiler control systems. It is based on butylphenyl phosphate esters selected for their excellent hydrolytic stability and contains carefully selected corrosion and oxidation inhibitors. It has excellent hydraulic performance and provides good fire risk protection.

Application

Castrol Anvol PE 46 B is suitable for use in hydraulic systems where, in the event of leakage or pipe fracture, there is risk of fire and where water containing fluids are unsuitable due to temperature limitations or other reasons. It is specifically designed for use in the electro-hydraulic governor control systems of team turbines, including systems using fine tolerance servo valves. Castrol Anvol PE 46 B was developed to eliminate service problems in high pressure systems resulting from spool valve erosion/corrosion - fluid leakage and loss of response - by possessing the properties known to minimize this effect, notably high resistivity, low chlorine content and a high level of fluid cleanliness. Physical properties such as foaming, air release and demulsibility are also carefully controlled within turbine manufacturers' specified limits.

Meets the requirements of major OEMs such as General Electric, Siemens, Mitsubishi Hitachi Power Systems and Alstom.
Meets requirement of FM Global against Standard 6930 for 'Less flammable hydraulic fluids '.
Meets the requirements of ISO Standard 12922 and ASTM D4293 for HFDR-type fire-resistant hydraulic fluids.

Advantages

- Offers good fire risk protection in systems where fire resistance is vital and where water containing fluids are unsuitable due to temperature limitations or the need to maintain a high hydraulic system pressure.
- High flash point, fire point and auto-ignition temperature provides excellent fire resistance.
- High resistivity eliminates spool valve corrosion/erosion due to electrokinetic effects.
- Low chlorine level minimizes valve erosion.
- High level of fluid cleanliness - minor amounts of particulate contamination can cause abrasive wear, filter blockage and valve sticking.

Typical Characteristics

Name	Method	Units	Anvol PE 46 B
Specific Gravity @ 20°C / 68°F	ISO 3675 / ASTM D1298	-	1.15
Kinematic Viscosity @ 100°C / 212°F	ISO 3104 / ASTM D445	mm²/s	5.4
Kinematic Viscosity @ 40°C / 104°F	ISO 3104 / ASTM D445	mm²/s	44.5
Kinematic Viscosity @ 0°C / 32°F	ISO 3104 / ASTM D445	mm²/s	1676
Pour Point	ISO 3016 / ASTM D97	°C / °F	-24 / -11
Foam Sequence I - tendency / stability	ISO 6247 / ASTM D892	ml / ml	10 / 0
Fluid Cleanliness	ISO 4406	Rating	< -/15/12
Water Separation @ 54°C / 129°F (40/37/3)	ISO 6614 / ASTM D1401	minutes	5
Acid Number	ISO 6619 / ASTM D664	mg KOH/g	0.05
Air Release @ 50°C / 122°F	ISO 9120 / ASTM D3427	minutes	4
Water Content	ISO 760	% wt	0.04
Volume Resistivity @ 20°C / 68°F	IEC 60247	MOhm.m	200
Flash Point - open cup method	ISO 2592 / ASTM D92	°C / °F	262 / 504
Fire Point	ISO 2592 / ASTM D92	°C / °F	354 / 669
Autoignition temperature (method A)	DIN 51794	°C / °F	540 / 1004
Autoignition temperature (method B)	ASTM E659	°C / °F	534 / 993
Hot Manifold Ignition	ISO 20823	°C / °F	No flashing or burning on tube at 726°C / 1339 °F
Chlorine Content	Microcoulometric	ppm	6
FZG Gear Scuffing test - A/8.3/90	ISO 14635-1	Failure Load Stage	8

Subject to usual manufacturing tolerances.

Care and Handling

User Advice

Service precautions

Periodic measurement of the fluid neutralisation number should be made during service as this provides a good guide to any product degradation which may occur. The level and rate of change of neutralisation value will be dependant upon the installation, conditions of operation, and whether in-line filtration of the fluid is carried out.

Conversion precaution

It is essential that rigorous flushing should be carried out when converting systems from other fluids to phosphate esters. All scale should be removed, and filters, hoses, seals and internally painted surfaces should be checked for compatibility with the new fluid**.**

Compatibility

Castrol Anvol PE 46 B is compatible with all metals commonly found in electro-hydraulic control systems. Aluminium components should be hard anodized and the use of copper and copper alloy components kept to a minimum. In common with all phosphate ester fluids, special seals are required and the following materials are suitable:

- Fluropolymers (Viton)
- Butyl Rubber
- PTFE
- Ethylene Propylene Rubber – under certain operating conditions.

Where paint materials are used, they should be epoxy resin based.

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