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LANXESS
Energizing Chemistry

Reolube® Turbofluids

High-performance fire resistant hydraulic fluids for power generation

Reolube® Turbofluids are high performance phosphate ester self extinguishing fire resistant fluids intended for use in applications where fire safety is critical. Originally developed for use in electrohydraulic control (EHC) systems of steam turbines, Reolube® Turbofluids also have application in gas turbines, turbo-compressors, reactor coolant pumps and generators as well as conventional applications. These fluids are manufactured from specially purified phosphate base stocks and additives providing improved stability and lubrication properties.

The high level of safety needed in both thermal and nuclear power plants make Reolube® Turbofluids the products of choice for power generation applications. There are other types of synthetic fluids promoted as being fire resistant and are FM Global Standard 6930 approved. However, their ease of ignition is only slightly better than that of conventional non-flame retardant lubricants, and when ignited these fluids readily propagate flame. In contrast, phosphate ester type fluids are extremely difficult to ignite and if ignited the flame will self-extinguish. This performance feature makes phosphate ester type fluids the preferable choice for applications with high fire risk.

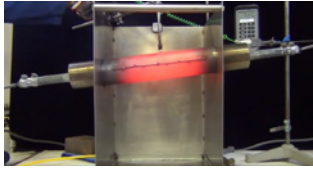
Comparison of flammability performance ISO 20823 manifold ignition test¹

Fluid	Ignition °C	Flaming drips to tray?	Flames in tray?
Phosphate ester (Reolube® Turbofluid 46XC)	741	No	No
Phosphate ester (Reolube® Turbofluid 46B)	726	No	No
Polyol ester	495	Yes	Yes
Polyalkylene glycol	458	Yes	Yes
Polyalphaolefin/ester	474	Yes	Yes
Mineral oil (Group I)	444	Yes	Yes

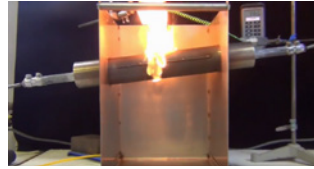
¹ The hot manifold ignition test checks for ignition (or not) of dripping liquid onto a heated pipe manifold. It also checks for continued burning of the liquid after ignition, both for "flaming drips" from the manifold and for continued burning in a catch pan tray.

X Reolube®

Hot manifold ignition test



Reolube® Turbofluid 46XC phosphate ester fluid at > 700°C



Polyalkylene glycol ignites at approx. 450°C

Reolube® Turbofluids meet or exceed all major Original Equipment Manufacturer (OEM) requirements as well as the following standards/specifications:

- FM Global Standard 6930 approved
- ISO 12922 for “fire resistant hydraulic fluids”
- ISO 10050 and ASTM D4293 for phosphate ester fluids in power station EHC applications

Reolube® Turbofluids offer the following benefits:

- High fire resistance including self-extinguishing properties. Other types of synthetic fire resistant hydraulic fluids on the market are not self-extinguishing.
- Excellent lubrication properties
- High thermal, oxidative and hydrolytic stability

Reolube® Turbofluids product portfolio

LANXESS offers a full line of phosphate ester fire resistant technologies available on the market to meet changing global and regional needs:

Reolube® Turbofluid 46B	An advanced readily biodegradable, low toxicity tert-butylphenyl phosphate fire-resistant hydraulic fluid with reduced hazard labeling
Reolube® Turbofluid 32B GT	An ISO 32 version of Reolube® Turbofluid 46B targeted at gas turbine applications
Reolube® Turbofluid 46XC	An industry standard trixylenyl phosphate fluid covering wide range of requirements for both steam and gas turbine control and lubrication systems
Reolube® 46RS	An ISO 46 trixylenyl phosphate fluid with a high degree of fire resistance approved for LMZ OEM turbines in both thermal and nuclear power stations
Reolube® Turboflush	A low toxicity tert-butylphenyl phosphate to be used as a cost effective flushing fluid in conjunction with Reolube® Turbofluid EHC fluids

Reolube® Turbofluid 46B is an advanced low toxicity fire-resistant hydraulic fluid that is trixylenyl phosphate-free and is designed specifically to comply with future EU REACH regulations for use in EHC systems.

Reolube® Turbofluids lubrication performance comparison

	Reolube® Turbofluid 46B	Reolube® Turbofluid 46XC
Air entrainment	Good	Excellent
Foaming tendency	Excellent	Excellent
Water separation	Excellent	Excellent
Volume resistivity	Excellent	Excellent
Hydrolytic stability	Good	Excellent
Oxidative stability	Excellent	Good

The better air entrainment and hydrolytic stability of trixylenyl phosphate fluids is an inherent property of the base stock used. However, the air entrainment and hydrolytic stability demonstrated by LANXESS tert-butyl phosphate products have reached a new performance level.

Please refer to “Reolube® Turbofluid 46B performance comparison with alternative EHC Fluid” brochure

For additional information on Reolube® Turbofluids please consult the following additional technical literature:

- Reolube® Turbofluid 46B performance comparison with Alternative EHC Fluid
- Reolube® Turbofluids performance hydraulic fluids – Engineering and design data
- Reolube® Turbofluids – A guide to their maintenance and use
- Reolube® Turbofluid product specific data sheets

Packaging:

Reolube® Turbofluids are available in bulk and 230 kg drums.

Contact your LANXESS representative as alternate packaging may be available.



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Customers in the USA are kindly
requested to refer to:
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Unless specified to the contrary, the values given have been established on standardized test specimens. The figures should be regarded as guide values only and not as binding minimum values. Kindly note that the results refer exclusively to the specimens tested. Under certain conditions, the test results established can be affected to a considerable extent by the processing conditions and manufacturing process.

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