



HITECBIO HFDR Cleaning Fluid

Phosphate Ester System Flushing Fluid

Phosphate Ester Flushing Technology for EHC System Cleaning and Fluid Changeover

Product Overview

HITECBIO HFDR Cleaning Fluid is a phosphate-ester-based system flushing fluid developed for maintenance cleaning of HFDR fire-resistant hydraulic systems and turbine electro-hydraulic control (EHC) systems. It is designed to disperse and suspend sludge, varnish-related deposits, oxidation residues, and other contaminants so they can be removed during heated circulation and draining.

The product is intended primarily for pre-changeover cleaning and for restoring system cleanliness after extended service. It is formulated for phosphate ester systems and is not intended for mineral-oil, PAO, or water-glycol hydraulic systems. It is a short-term flushing fluid and must not be used as the long-term operating fluid.

Product Features and Application Benefits

Deposit Dispersion and Contaminant Removal

- Designed to disperse and suspend sludge, varnish-related deposits, oxidation residues, and other system contaminants
- Supports contaminant transport to filters and drain points during the circulation process
- Helps reduce the risk of loosened contaminants redepositing in oil passages and servo-valve components

System Cleanliness and Changeover Support

- Suitable for maintenance cleaning of EHC systems after extended service
- Supports the restoration of system cleanliness before fresh phosphate ester operating fluid is introduced
- Helps manage contamination-related risks such as servo-valve sticking and reduced control accuracy

Heated Circulation and Controlled Drainage

- Designed for heated circulation and complete draining while the fluid remains warm
- Helps keep loosened contaminants suspended during the prescribed cleaning cycle and removal process

Recommended Applications

- Phosphate ester fire-resistant hydraulic systems classified as HFDR

- Steam-turbine and gas-turbine electro-hydraulic control (EHC) systems
- Pre-changeover cleaning before fresh phosphate ester fluid is introduced
- Restorative cleaning after extended service
- In-service systems affected by sludge, deposits, or contamination

Recommended Flushing Procedure

The following procedure is provided as a general engineering reference. Actual work must follow the equipment manufacturer's maintenance instructions and be carried out by appropriately qualified personnel.

1. Drain the in-service phosphate ester fire-resistant hydraulic fluid as completely as practicable.
2. Replace or prepare the filter elements in accordance with the maintenance plan.
3. Fill the system with HITECBIO HFDR Cleaning Fluid to the normal circulating level.
4. Where permitted by the equipment manufacturer, maintain the reservoir temperature at 55–60 °C.
5. Circulate under normal system conditions for 48–72 h.
6. Drain the cleaning fluid completely while it remains warm.
7. Remove accessible deposits from the reservoir bottom where necessary.
8. Refill the system with the approved phosphate ester operating fluid.

System condition, contamination severity, filter differential pressure, and the equipment manufacturer's conversion procedure should be considered when determining whether an additional flushing cycle is required.

Typical Properties

Property	Test Method	Typical / Control Value
Appearance	Visual	Clear and transparent; free of visible impurities or suspended matter
Density at 20 °C, kg/m ³	ASTM D1298	1,130–1,150
Kinematic viscosity at 40 °C, mm ² /s	ASTM D445	41.4–50.6
Pour point, °C	ASTM D97	≤–18
Acid number, mg KOH/g	ASTM D664	0.03
Flash point (COC), °C	ASTM D92	250
NAS cleanliness class	NAS 1638	≤6

The values shown are typical averages for technical reference only and do not constitute a quality guarantee.

Material Compatibility and System Applicability

HITECBIO HFDR Cleaning Fluid is formulated for phosphate ester hydraulic systems. Compatibility with coatings, seals, hoses, metals, and filter materials depends on the specific material grade, formulation, service history, temperature, and contact duration.

Confirm compatibility against equipment manufacturer requirements or suitable compatibility-test results before formal use. The product is not recommended for mineral-oil, PAO, or water-glycol hydraulic systems.



Packaging Specifications

- 208 L steel drum
- Other packaging options may be agreed subject to supply conditions

Storage and Handling

Store the product indoors in sealed containers and protect it from water ingress, direct sunlight, and contamination. If outdoor storage is unavoidable, provide suitable shelter and protection against rain and moisture.

The recommended storage temperature should not exceed 60 °C. Confirm that the packaging is intact before use and follow a first-in, first-out inventory policy.

Health, Safety and Environment

Before using this product, consult the latest Safety Data Sheet (SDS) and follow its requirements for storage, handling, personal protective equipment, spill response, waste disposal, and environmental protection. Used flushing fluid may contain contaminants removed from the system and must be collected and disposed of in accordance with local regulations and site requirements. For unlisted applications or operating conditions, contact HITECRUN Technical Service before use.

Management System Certifications

This product is manufactured under ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, and ISO 50001:2018 management systems.

Disclaimer

The information in this document is based on technical data and application experience available at the date of issue and is provided solely as general guidance. It does not constitute a quality guarantee, performance warranty, or contractual term. Users are responsible for assessing suitability, defining the appropriate flushing procedure, and complying with applicable legal, safety, and environmental requirements.

HITECRUN reserves the right to update this document without prior notice in response to ongoing research, regulatory changes, and application experience. "HITECBIO", "HITECRUN", and the related graphical marks are protected trademarks.

© 2026 HITECRUN. All rights reserved.