

UNIRICHNOX ML801

Ashless Additive Package for HFD-U Fire-Resistant Hydraulic Fluids

Engineered for oxidation resistance, anti-wear protection and fluid reliability in synthetic ester and biodegradable hydraulic-fluid formulations.

PRODUCT OVERVIEW

UNIRICHNOX ML801 is a balanced, ashless additive package developed for formulating HFD-U fire-resistant hydraulic fluids based on synthetic ester and biodegradable synthetic base oils. The package combines oxidation inhibition, anti-wear and extreme-pressure protection, corrosion control and metal deactivation in a readily handled liquid concentrate.

It is intended to help formulators develop hydraulic fluids with robust thermal-oxidative stability, metal-surface protection, air-release, foam-control and water-separation performance. Final formulation performance depends on base-oil selection, treat rate, blending practice and validation testing.

KEY BENEFITS

- Ashless chemistry for clean hydraulic-fluid formulation.
- Thermal-oxidation control to help limit viscosity increase, acidity growth and deposits.
- Anti-wear and load-carrying performance for pumps, hydraulic components and light-duty circulating gear systems.
- Corrosion inhibition and metal deactivation, including copper-surface protection.
- Liquid concentrate with no added diluent for convenient blending and dosage control.
- Designed for use with synthetic ester and biodegradable synthetic base oils; not intended for mineral-oil formulations.

RECOMMENDED TREAT RATE

For HFD-U fire-resistant hydraulic-fluid formulations based on biodegradable synthetic base oils, a typical starting treat rate is 1.2–1.5% by mass. The optimum dosage shall be confirmed through finished-fluid testing against the applicable specification and equipment requirements.

TYPICAL PHYSICAL PROPERTIES

Property	Test Method	Typical Value
Appearance	Visual	Clear brown liquid
Density at 15 °C, kg/L	ASTM D1298	0.95–1.05
Kinematic viscosity at 40 °C, mm²/s	ASTM D445	< 300
Flash point, °C	ASTM D92	> 170
Acid number, mg KOH/g	ASTM D664	≤ 2.0

The data shown above are typical values only and do not constitute a product specification or warranty.

ILLUSTRATIVE FORMULATION PERFORMANCE

Test fluid: UNIESTER 3404 synthetic ester base oil with UNIRICHNOX ML801. Results are illustrative formulation data, not finished-product specifications.

Property	Test Method	1.2% Treat Rate	1.5% Treat Rate
Demulsibility (54 °C, 40ml oil, 40ml distilled water) oil/water/emulsion (mL) separation time (mins)	ASTM D1401	40/37/3 15	40/37/3 12
Copper strip corrosion (100 °C, 3 h)	ASTM D130	1a	1a
Four-ball wear scar (40 kg, 75 °C, 1200 rpm, 60 min), mm	ASTM D2266	0.45	0.42
FZG gear test, A/8.3/90	ASTM D5182	12	12
Rust prevention Procedure A: distilled water Iron rod (rating) Procedure B: synthetic sea water Iron rod (rating)	ASTM D665	Pass Pass	Pass Pass
Air release at 50 °C, min	ASTM D3427	3	3
TOST life (95 °C, H ₂ O, Fe and Cu catalysts)	ASTM D943	1,000 ⁺	1,000 ⁺
Foam tendency/stability, mL/mL Sequence I, 24 °C Sequence II, 93.5 °C Sequence III, after 24 °C	ASTM D892	10/0 10/0 10/0	10/0 10/0 10/0

FORMULATION GUIDANCE

- Use dry, clean blending equipment and control water contamination throughout production.
- Confirm compatibility with the selected base oil, viscosity modifier, seal material and other additives before commercial manufacture.
- Validate the finished fluid for viscosity, fire resistance, corrosion protection, oxidation stability, air release, foam control and OEM-specific requirements.

PACKAGING

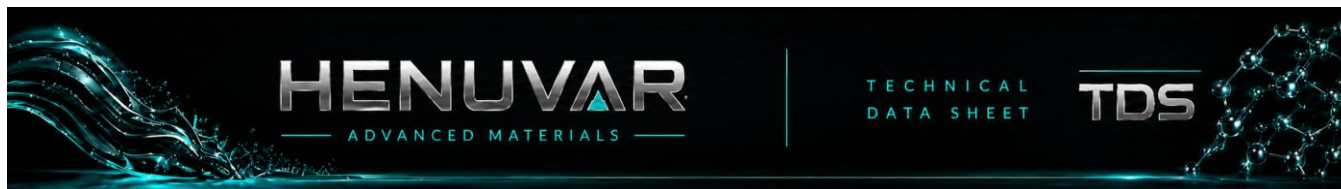
- 180 KG steel drum
- Custom OEM packaging available

STORAGE AND HANDLING

Store in tightly closed original containers indoors and protect from moisture, direct sunlight and contamination. Where outdoor storage is unavoidable, keep containers protected from rain and standing water. Storage temperatures should not exceed 60 °C; avoid prolonged exposure to severe cold or large temperature swings. Follow first-in, first-out inventory practice and inspect packaging integrity before use.

QUALITY AND MANAGEMENT SYSTEMS

Manufactured within management systems certified to ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 and ISO 50001:2018.



Disclaimer

The information in this document is based on technical data, test results and application experience available at the date of issue. It is provided for general guidance only and does not constitute a warranty, performance commitment or contractual term. Because conditions of formulation, manufacture, storage and use are outside HENUVAR New Materials (Tianjin) Co., Ltd.'s control, users are responsible for determining suitability for their intended application and for complying with applicable laws, regulations and equipment-manufacturer requirements.

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