PETRO-CANADA LUBRICANTS

A HOLLYFRONTIER BUSINESS

TECH DATA

HYDREX™ EXTREME

WIDE TEMPERATURE HYDRAULIC FLUID

INTRODUCTION

Petro-Canada's HYDREX EXTREME is a premium quality, high performance hydraulic fluid designed for extremely wide temperature protection for high and severe low temperatures.

HYDREX EXTREME hydraulic fluid starts with the HT purity process to produce 99.9% pure base oils. These crystal-clear fluids are free of impurities that can hinder the performance of competitive conventional oils. HYDREX EXTREME is specially formulated to deliver enhanced oxidation and shear stability as well as antiwear protection to mobile equipment and industrial machinery. Drawing from a few decades of formulating experience, Petro-Canada utilizes specially selected additives to provide a hydraulic fluid that lasts longer and has an extremely wide operating temperature range.

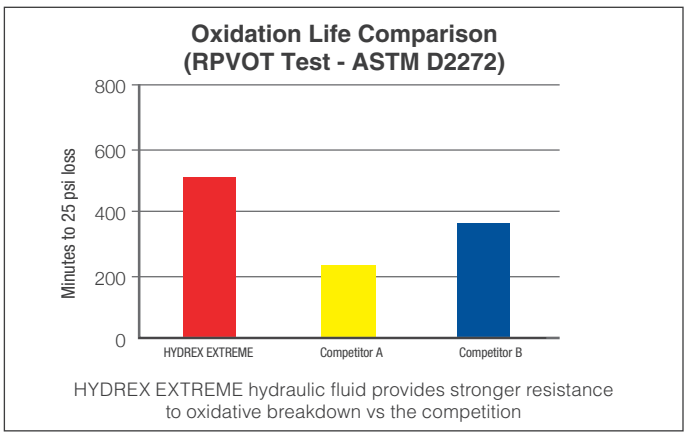
FEATURES AND BENEFITS

Wide temperature protection

- Outstanding low temperature flow characteristics allow start-up as low as -48°C (-54°F) to operating temperatures as high as +76°C (169°F) for mobile equipment and +60°C (+140°F) for industrial machinery
- May eliminate seasonal change-outs to help reduce inventory costs, downtime and chance of misapplication

Exceptional oxidation stability

- Longer oil life helps extend time between oil changes reducing downtime and costs
- Helps reduce sludge build-up that can lead to wear and shorter filter life
- Helps reduce harmful varnish deposits to ensure smooth reliable operation of hydraulic valves and actuators



HYDREX EXTREME hydraulic fluid provides stronger resistance to oxidative breakdown vs the competition

Excellent anti-wear characteristics

- Helps extend equipment life for reduced maintenance and downtime

Contains no heavy metals such as barium or zinc to help minimize environmental effects including waste water contamination

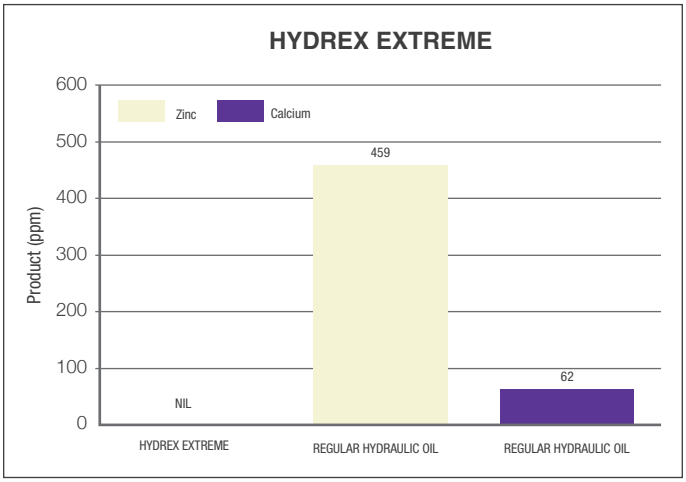
Inherently biodegradable

- Greater than 40% biodegradable within a 28 day period

Exceptional wet and dry filterability

Excellent rust and corrosion protection

Excellent water separability and hydrolytic stability



Petro-Canada Lubricants starts with the HT purity process to produce water-white, 99.9% pure base oils. The result is a range of lubricants, specialty fluids and greases that deliver maximum performance for our customers.

MAXIMUM PERFORMANCE • PERFORMANCE MAXIMALE • HT ™

APPLICATIONS

Petro-Canada's HYDREX EXTREME hydraulic fluid is recommended for vane, gear and axial piston hydraulic pumps over an extremely wide range of operating temperatures. It is suitable for applications where systems must be started up at very low temperatures but have higher temperatures during operation. It is also suitable for use in bucket trucks operating around power lines or in bucket truck hydraulic systems requiring extreme low temperature pumpability.

HYDREX EXTREME is suitable for use in equipment manufactured by:

- Eaton Vickers
- Denison
- Sauer-Danfoss
- Bosch-Rexroth
- Racine
- Oilgear
- Hydreco
- Dynex
- Liebherr
- Others

TYPICAL PERFORMANCE DATA

Property	ASTM Test Method	HYDREX EXTREME
Start-up Temperatures[1], °C (°F)	–	-48 (-54)
Operating Temperature Range[1], °C (°F) Mobile Equipment Industrial Machinery	 – –	 -35 to +76 (-31 to 169) -35 to +60 (-31 to 140)
Density, kg/L at 15°C (60°F)	D4052	0.852
Viscosity, cSt at 40°C (SUS @ 100°F) cSt at 100°C (SUS @ 210°F) cP at -45°C (-49°F)	D445 D2983	33.6 (165) 13.0 (70.4) 2985
Viscosity Index	D2270	404
Flash Point, °C (°F)	D92	141 (285)
Pour Point, °C (°F)	D5950	-54 (-65)
Rust Test, Procedure A&B, 24 hours	D665	Pass
Water Separability, 54°C (129°F)	D1401	40-40-0 (30)
Dielectric Breakdown Voltage, kV	D877	52
Biodegradability, %	OECD 301B	> 40
Oxidation stability, Hours to 2.0 TAN	D943	8000+
RPVOT, minutes	D2272	539
Air Release, 50°C, minutes	D3427	4.9

The values quoted above are typical of normal production. They do not constitute a specification.

[1]Operators should always refer to their equipment manufacturer's recommendations regarding the operating temperature ranges and fluid viscosity requirements. Petro-Canada Lubricants' recommendations are approximate and based on the below:
- Startup temperature is defined as the temperature at which the fluid dynamic viscosity is 10,000 cP.
- The lower limit of operating temperature range for both mobile and industrial machinery is defined as the temperature at which the fresh fluid dynamic viscosity is 750 cP.
- The upper limit of operating temperature range is defined as the temperature at which the after shear kinematic viscosity of the fluid is 10 cSt for mobile equipment and 13 cSt for industrial equipment.

Please refer to TB-1290 for more information on lubricant & hydraulic fluid shear stability. Mobile equipment typically refers to machinery that encompasses a transmission and braking system to allow and prohibit movement. Industrial machinery is typically stationary, with hard piping and auxilliary components in place.

Learn more about us: **lubricants.petro-canada.com**
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Committed to the disciplined operation of our business.

CERTIFIED
ISO 9001: 2015
ISO 14001: 2015
IATF 16949: 2016

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