Petro-Canada

TechData

HYDREX™ MV
Wide Temperature Range Hydraulic Fluids

Introduction

Petro-Canada's HYDREX™ MV hydraulic fluids are advanced formula, long life, anti-wear fluids designed for use in hydraulic systems exposed to wide temperature ranges. HYDREX MV provides excellent operating and maintenance benefits for increased productivity. HYDREX MV takes your equipment to higher levels of wide temperature performance.

HYDREX MV hydraulic fluids start with the HT purity process to produce 99.9% pure, crystal clear base oils. By removing the impurities that can hinder the performance of competitive conventional oils, and blending in our specialty additives, HYDREX MV retains its 'fresh oil' properties longer providing resistance to oxidative breakdown and outstanding wear protection in wide temperature ranges.

Features and Benefits

- **Seasonal use under wide temperature ranges**
  - Increased equipment precision and responsiveness
  - Better protection from wear in low and high temperatures
  - Reduced inventory for greater operational efficiencies and less chance of misapplication

How HYDREX MV reduces seasonal changeouts and inventory

STRATEGY	Winter	Summer	Stable*
In climates with wide temperature extremes, more than one straight grade hydraulic fluid may have to be used in a season.	AW 22 AW 32	AW 46 AW 68†	AW 32 AW 46
Replace your straight grade product with one wide-temperature range product per season.	**MV 22**	**MV 60**	**MV 36**

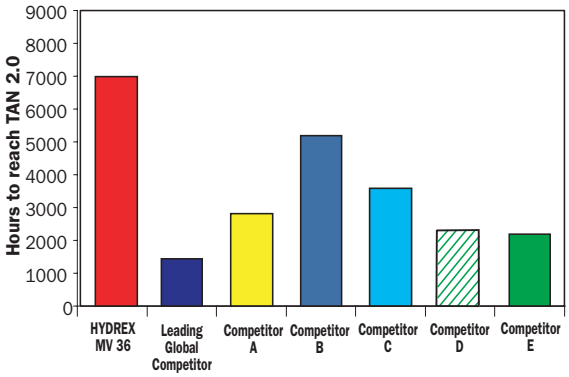
*Stable refers to locations with minimal seasonal temperature swings.
† Up to operating temperatures of 83°C (181°F)

What is the HT difference?

Petro-Canada 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.

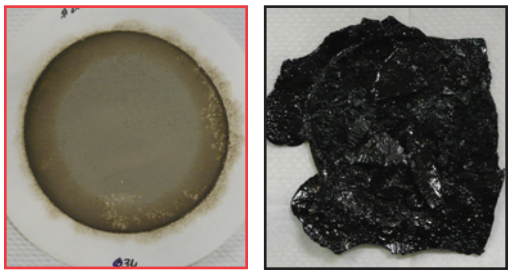
- **Outstanding oxidation and thermal stability**
  - Longer oil life which helps extend drain intervals for reduced change-out costs and less reservoir exposure to external contaminants
  - Decreases varnish build up that can interfere with servo and directional valve operation

Oxidation Life Comparison
ASTM D943 Test



HYDREX MV lasts 3x longer than the leading global competitor

- Minimizes harmful sludge build up in the reservoir that can lead to shortened oil life and equipment wear

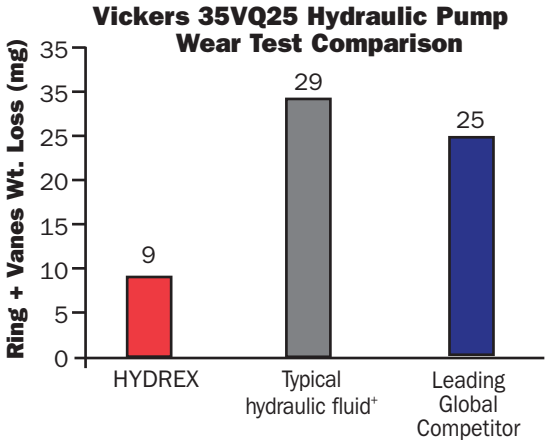


HYDREX MV 36
2,012 Hrs

Leading Global
Competitor
2,012 Hrs

HYDREX demonstrates significantly lower sludge formation, reflecting outstanding oil quality‡

- **Exceptional anti-wear protection**
  - Extends equipment life
  - Reduces maintenance and mechanical failure
  - Protects equipment being driven longer, harder and faster in tougher conditions
  - Improves operating reliability over a wide range of pressures

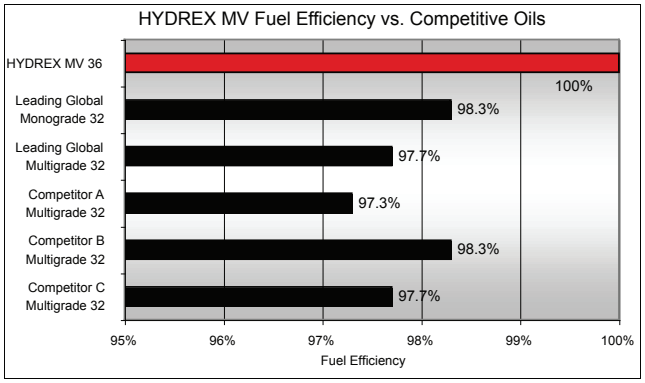


+Average of 13 products tested

HYDREX provides 2x better wear protection than the leading global competitor

- **Improved rust and corrosion prevention**
  - Iron and other metal components are protected against water damage
- **Excellent water separability and hydrolytic stability allows oil to be reused**
  - Oil separates readily from water without loss of performance additives
- **Improved foam and air entrainment performance**
  - Prevents overflowing of reservoirs
  - Eliminates "sponginess" from hydraulic systems and prevents pump cavitation

- **High after shear VI to maintain optimal viscosity at operating temperatures**
  - Increased pump efficiency in outdoor applications
  - Lower diesel fuel consumption for same amount of work, or increased equipment productivity
  - Less CO_2 emissions



HYDREX MV 36 provides better fuel efficiency vs. leading competitive hydraulic oils, given the same amount of work

The chart demonstrates the relative fuel efficiency between HYDREX MV 36 and competitor products (HYDREX MV 36 represents a benchmark, and does not imply 100% fuel efficiency). Comparison based on after shear viscosities in Denison T6CM pump - B10 cartridge 2000 rpm, 200 bar, 70°C (158°F).

Applications

Petro-Canada's HYDREX MV hydraulic fluids are recommended for wide temperature use in piston, gear and vane hydraulic pumps found on industrial machinery and mobile equipment. HYDREX MV offers minimal fluid friction at low start-up temperatures and provides the correct viscosity at high operating temperatures. HYDREX MV may be used in systems equipped with fine filters down to 3 microns without loss of additives or filter plugging.

HYDREX MV hydraulic fluids are approved for use in equipment manufactured by Bosch-Rexroth and are recommended for use in equipment manufactured by Eaton Vickers, Denison, Komatsu, Sauer-Danfoss, Oilgear, Hydreco, Dynex and others.

HYDREX MV fluids meet the following manufacturers' specifications:

- Eaton Vickers M-2950-S and I-286-S
- Komatsu (MV 36)

HYDREX MV is suitable for use where the following specifications are required:

- USS 127
- ISO 6743/4 Type HV
- DIN 51524 Part 3 HVLP (MV 22 & 36)
- DIN 51524 Part 2 HLP (MV 60)
- JCMA HK-1 (MV 36)

HYDREX MV fluids are classified as NSF International H2, and HYDREX MV 36 is classified as CFIA Type N2.

‡ Based on industry test ASTM D4310 (extended to 2,012 hours).

Typical Performance Data

PROPERTY	TEST METHOD	HYDREX MV		
		MV 22	MV 36	MV 60
Start-up Temperature[1], °C/°F	–	-41/-42	-35/-31	-26/-15
Operating Temperature Range[2], °C/°F	–			
Mobile Equipment		-25 to 64 / -13 to 147	-18 to 77 / 0 to 171	-5 to 91 / 23 to 196
Industrial Machinery		-25 to 57 / -13 to 135	-18 to 66 / 0 to 151	-5 to 83 / 23 to 181
Viscosity, cSt @ 40°C	D445	23.8	32.3	58.0
cSt @ 100°C		5.0	6.3	8.9
SUS @ 100°F		123	165	297
SUS @ 210°F		42.7	47.0	55.8
cP @ -35°C (-31°F)	D2983	–	–	51,770
cP @ -40°C (-40°F)		5,810	24,700	–
Viscosity Index	D2270	141	149	131
Flash Point, °C/°F	D92	208/406	226/439	223/433
Pour Point, °C/°F	D5950	-51/-60	-48/-54	-48/-54
Oxidation Stability, hours	D943	7000+	7000+	7000+
Oxidation Stability[3], mg sludge	D4310	Pass	Pass	Pass
Rust, procedures A & B, 24 h	D665	Pass	Pass	Pass
Hydrolytic Stability[3], Copper Loss, mg/cm^2	D2619	Pass	Pass	Pass
FZG Failure Load Stage	D5182	11	12	>12
Dielectric breakdown voltage, kV	D877	47	47	42
Four-Ball Wear Test, Scar Diam. (mm) 40 kg, 1200 rpm, 75°C, 1hr.	D4172	0.5	<0.5	<0.5
Water Separability at 54°C (129°F)	D1401	40-40-0(5)	40-40-0(5)	40-40-0(10)[4]

[1] Start-up is defined by the temperatures at which the oil viscosity is 10,000 cP.

[2] Operating temperature limits are determined by the equipment manufacturer. Petro-Canada has chosen to define the upper operating temperature to be the after-shear oil viscosity of 10 cSt (at 40°C) for mobile equipment and 13 cSt (at 40°C) for industrial machinery, while the lower operating temperature to be the fresh oil viscosity of 750 cP for both mobile and industrial machinery.
These ranges are only an approximation and the operator should always check the viscosity requirements as specified by their equipment manufacturer. 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.

[3] Pass is defined as meeting the requirement of the Denison HF-0 specification.

[4] At 82°C (180°F)

Health and Safety

To obtain Material Safety Data Sheet (MSDS), contact one of Petro-Canada's TechData Info Lines.

TechData Info Lines

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