Petro-Canada

TechData

ENVIRON™ MV Hydraulic Fluids

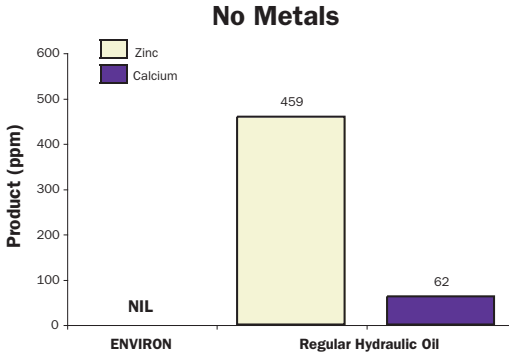
Introduction

Petro-Canada's ENVIRON MV hydraulic fluids are non-toxic, inherently biodegradable and recyclable and are therefore particularly suited for hydraulic applications in environmentally sensitive locations. ENVIRON MV hydraulic fluids are premium multigrade anti-wear hydraulic fluids designed for year-round use in both mobile and stationary heavy duty hydraulic systems operating in wide extremes of temperatures.

ENVIRON MV starts with a 99.9% pure, crystal clear base oil. By removing the impurities that can hinder the performance of competitive conventional oils, and blending in our specialty additives, ENVIRON MV delivers exceptional performance.

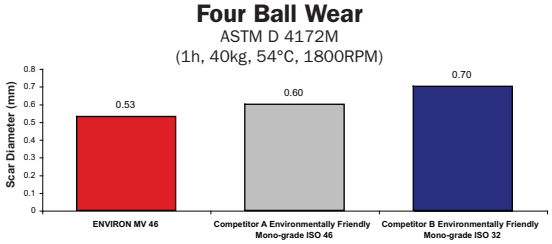
Features and Benefits

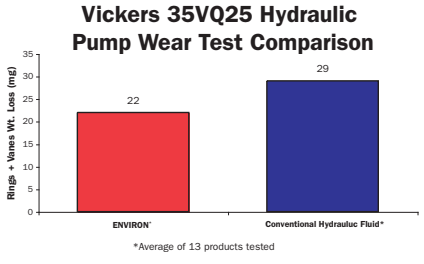
- **Reduce occurrence of waste water contamination by metals**
  - Transition metal content in ground water or waste water streams is a concern because it bio-accumulates in the food chain
  - Does not contain metals such as Zinc or Calcium.



ENVIRON is metal free and therefore does not contaminate ground water and waste water streams

- **Non-toxic and very low odour**
  - Non-toxic to water-inhabiting species (passes stringent acute aquatic toxicity on daphnia and trout test protocols)
  - ENVIRON MV contributes to a cleaner, safer and more pleasant work environment
  - Tested as non-carcinogenic
- **Inherently biodegradable**
  - Greater than 20% biodegradable within a 28 day period
- **Recyclable**
  - Can be recycled and reclaimed, unlike vegetable oil based products which have to be incinerated or land farmed
- **Excellent anti-wear, rust and corrosion protection**
  - Designed to meet or exceed the performance requirements of conventional anti-wear hydraulic oils



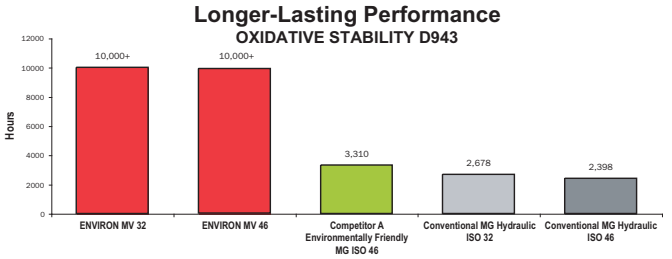


ENVIRON provides excellent wear protection

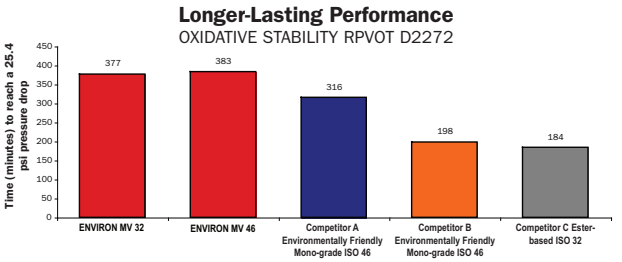
What is the HT difference?

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.

- **Superior oxidation and thermal stability compared to competitive vegetable oil based products and conventional hydraulic oils**
  - Long oil life which extends the time between oil changes
  - Reduces sludge and varnish deposits to ensure smooth, reliable operation of hydraulic valves and actuators



Note that the conventional MG Hydraulic ISOs are an average of several competitive products



ENVIRON has greater resistance to oxidation and retains its fresh oil properties longer for fewer hydraulic fluid changes.

- **Seasonal use under wide extremes of temperature**
  - Allows hydraulic systems to start up at temperatures as low as -34°C / -29°F (MV 32)
  - Provides excellent lubrication of hydraulic components at high operating temperatures
  - Unlike vegetable oils, does not gel over time at moderately low temperatures

How ENVIRON MV reduces change outs and inventory

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

* Up to operating temperatures of 78°C (172°F)

- **Excellent resistance to foaming**
- **Excellent air release performance**
- **Excellent water separability and hydrolytic stability allows oil to be reused**
  - ENVIRON MV separates readily from water without loss of performance additives.

Applications

Petro-Canada's ENVIRON MV is formulated for both indoor and outdoor seasonal use in piston, gear and vane hydraulic pumps found in industrial plant and mobile equipment used at various locations, including marine, woodlands, drilling, and mining sites. When ENVIRON MV is used in systems equipped with fine porosity filters down to 3 microns, there is no loss of additives or filter plugging.

ENVIRON MV meets the following hydraulic equipment manufacturers' specifications:

- Bosch-Rexroth RD 90220
- Eaton Vickers M-2950-S

ENVIRON MV is recommended for use in equipment manufactured by:

- Eaton (Vickers) Sauer-Danfoss, Bosch-Rexroth, Racine, Oilgear, Hydreco, Dynex and others.

ENVIRON MV 32 and 46 are suitable for use when a DIN 51524 Part 3 HVLP or ISO 6743 /4 Type HV fluid is called for. Environ MV fluids meet the WGK (German Water Hazard Classification) of 1. ENVIRON MV 32 and 46 are also suitable for use in equipment manufactured by Parker/Denison.

Because ENVIRON MV does not contain zinc anti-wear additives, it can be used in hydraulic pumps with silver bearings, such as Lucas pumps because it will not displace the silver in these bearings.

Typical Performance Data

PROPERTY	TEST METHOD	ENVIRON MV	
		MV 32	MV 46
Start-up Temperature[1],°C / °F	–	-34 / -29	-30 / -22
Operating Range[2], °C / °F	–		
Mobile Equipment	–	-15 to +76 / +5 to 169	-10 to +84 / +14 to +183
Industrial Equipment	–	-15 to +66 / +5 to +151	-10 to +78 / +14 to +172
Density @ 15°C, kg/l	D4052	0.840	0.843
Flash Point, °C / °F	D92	220 / 428	250/ 482
Viscosity, cSt @ 40°C	D445	33.6	44.4
cSt @ 100°C		6.5	8.0
SUS @ 100°F		171	226
SUS @ 210°F		47.6	52.7
Viscosity Index	D2270	151	154
Pour Point, °C / °F	D5950	-45 / -49	-45 / -49
Rust, procedures A & B, 24 h	D665	Pass	Pass
Copper Corrosion , 3 hr, 100°C / 212°F	D130	1b	1b
Air Release @ 50°C / 122°F	D3427	4.0	5.0
Vickers 35VQ25 Vane Pump	Vickers M-2950-S	Pass	Pass
Water Separability @ 54°C / 129°F	D1401	40-40-0 (15)	40-40-0 (15)
Oxidation stability, hours to 2.0 TAN	D943	10000+	10000+
Dielectric breakdown voltage, kV	D877	44	51
Biodegradability, %			
Primary	CEC L-33-A-94	> 50	> 30
	OECD 301B	> 20	> 20
Aquatic Acute Toxicity			
EC_{50} (Inhibition), ppm	OECD 209	10,000+	10,000+
EC_{50} (Daphnia), ppm	OECD 202	510	510
LC_{50} (Trout), ppm	EPS 1/RM/9 July 90	20,000+	20,000+

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

[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 for mobile equipment and 13 cSt 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. 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.*

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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To learn more about how Petro-Canada lubricants, specialty fluids, oils and greases can help maximize your equipment performance, savings and productivity, please contact us at :

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