

## ENVIRON™ MV HYDRAULIC FLUIDS

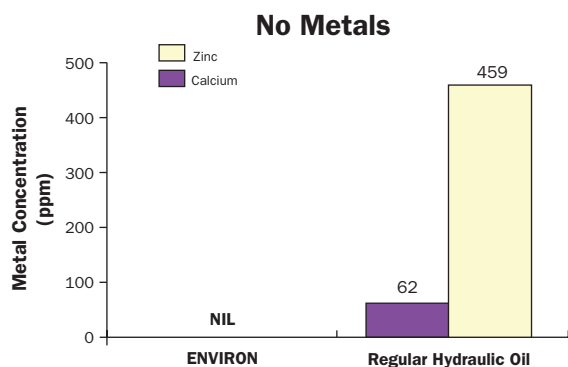
### Introduction

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. ENVIRON MV does not contain metal based additives.



**ENVIRON is metal free and therefore does not contaminate ground water and waste water streams with transition metals.**

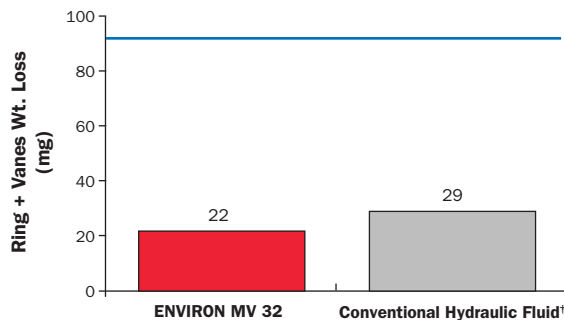
- **Non-toxic and very low odour**
  - Not acutely toxic to fish, daphnia or algae according to the United Nations Globally Harmonized System (GHS) criteria
  - ENVIRON MV contributes to a cleaner, safer and more pleasant work environment
- **Recyclable**
  - Can be recycled and reclaimed, unlike vegetable oil based products which have to be incinerated or land farmed
- **Inherently biodegradable**
  - Greater than 50% biodegradability within a 28 day period according to OECD 301B (vs. 20% minimum for inherently biodegradable classification)
- **Excellent anti-wear, rust and corrosion protection**
  - Designed to meet or exceed the performance requirements of conventional anti-wear hydraulic oils

### What is the HT difference?

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.



### Eaton 35VQ25 Hydraulic Pump Test



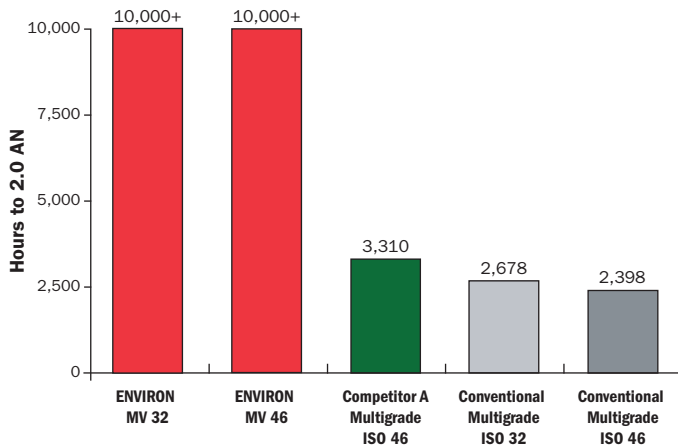
\*90mg represents the maximum wear allowed as per Eaton's Brochure (03-401-2010)

†Average of 13 hydraulic fluids tested

**ENVIRON provides excellent wear protection.**

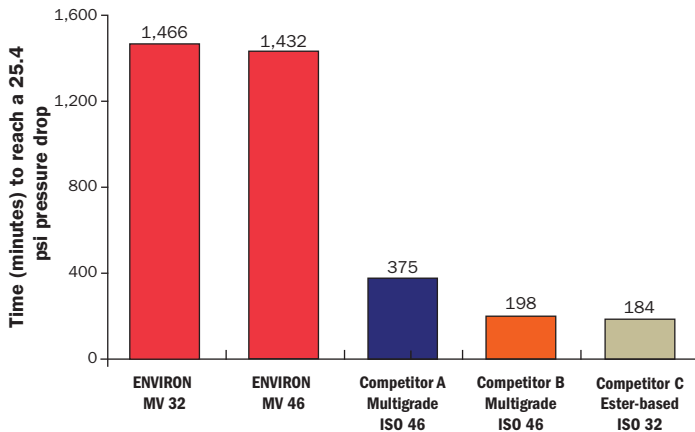
- **Superior oxidation and thermal stability compared to competitive vegetable oil based products and conventional hydraulic oils**
  - Longer oil life, which extends the time between oil changes
  - Helps reduce sludge and varnish deposits to ensure smooth, reliable operation of hydraulic valves and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

### Longer-Lasting Performance Oxidative Stability, ASTM D943



Note: The results for the Conventional Multigrades are an average of several competitive products

### Longer-Lasting Performance Oxidative Stability, RPVOT, ASTM D2272



**ENVIRON MV 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 -36°C / -33°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

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

### Applications

Petro-Canada's ENVIRON MV hydraulic fluids are formulated for both indoor and outdoor seasonal use in piston, gear and vane hydraulic pumps found in industrial plant and mobile equipment used in environmentally sensitive areas. 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 32 and 46 are approved for use by the following OEM and against the following specification:

- Arburg (MV 46)
- Denison HF-0

In addition, ENVIRON MV is recommended for use in equipment manufactured by: Parker Hannifin (Denison), Eaton (Vickers), Sauer-Danfoss, Racine, Oilgear, Hydreco, Dynex and others.

ENVIRON MV fluids are suitable for use in Bosch-Rexroth equipment and when a DIN 51524 Part 3 HVLV or ISO 6743/4 Type HV fluid (ISO 11158) is recommended. ENVIRON MV fluids meet the WGK (German Water Hazard Classification) of 1.

ENVIRON MV fluids are also NSF H2 listed (no allowable food contact).

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 <sup>1</sup> , °C / °F	–	-36 / -33	-33 / -27
Operating Range <sup>2</sup> , °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 74 / 14 to 165
Density @ 15°C, kg/l	D4052	0.846	0.853
Flash Point, COC, °C / °F	D92	239 / 462	247 / 477
Kinematic Viscosity, cSt @ 40°C	D445	33.8	45.0
cSt @ 100°C		6.7	8.2
SUS @ 100°F		172	229
SUS @ 210°F		48	53
Viscosity Index	D2270	160	158
Pour Point, °C / °F	D5950	-48 / -54	-48 / -54
Rust Prevention, Procedures A & B, 24 h	D665	Pass	Pass
Copper Corrosion 3Hr @ 100°C / 212°F	D130	1b	1b
Air Release @ 50°C / 122°F, Minutes	D3427	2.0	2.0
Vickers 35VQ25 Vane Pump Test	D6973	Pass	Pass
Denison Hybrid Pump Test, T6H20C	TP-30533	Pass	Pass
Water Separability @ 54°C / 129°F oil-water-emulsion (minutes)	D1401	40-40-0 (15)	40-40-0 (20)
Oxidation Stability, Hours to 2.0 AN	D943	10,000+	10,000+
Dielectric Breakdown Voltage, kV	D877	52	52
Biodegradability, %	CEC L-103-12 OECD 301B	>60 >50	>60 >50
Aquatic Acute Toxicity <sup>3</sup>			
EC <sub>50</sub> (Algae), ppm (mg/L)	OECD 201	>9,000	>9,000
EC <sub>50</sub> (Daphnia), ppm (mg/L)	OECD 202	>10,000	>10,000
LC <sub>50</sub> (Trout), ppm (mg/L)	OECD 203	>1,000	>1,000

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

<sup>1</sup> Start-up is defined by the temperatures at which the oil viscosity is 10,000 cP.

<sup>2</sup> 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 auxiliary components in place.

<sup>3</sup> According to GHS, a substance is "not environmentally toxic" if LC<sub>50</sub> and EC<sub>50</sub> values for OECD 201, 202 and 203 are >100 mg/L.

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To order product or to learn more about how Petro-Canada Lubricants  
can help your business visit: **[lubricants.petro-canada.com](http://lubricants.petro-canada.com)**  
or contact us at: **[lubecsr@petrocanadalsp.com](mailto:lubecsr@petrocanadalsp.com)**



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