



LUBRICANTS

AN HF SINCLAIR BRAND

# TECH DATA

## ENVIRON™ MV R

### HYDRAULIC FLUIDS

## INTRODUCTION

Petro-Canada Lubricants ENVIRON MV R hydraulic fluids are ashless, non-toxic, readily biodegradable and recyclable and are therefore particularly suited for hydraulic applications in environmentally sensitive locations. ENVIRON MV R 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 R hydraulic fluids are blended with ultra-pure, high quality base oils. By removing the impurities that can hinder the performance of competitive conventional oils, and blending with a premium ashless additive system, ENVIRON MV R delivers exceptional performance and protection without compromise.

## FEATURES AND BENEFITS

### Readily biodegradable

- Greater than 70% biodegradability within a 28-day period according to OECD 301B, safely above the 60% minimum requirement for readily biodegradable classification

### 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 R contributes to a cleaner, safer and more pleasant work environment

### Reduce occurrence of 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 R is ashless and does not contain any metal-based additives.

### 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

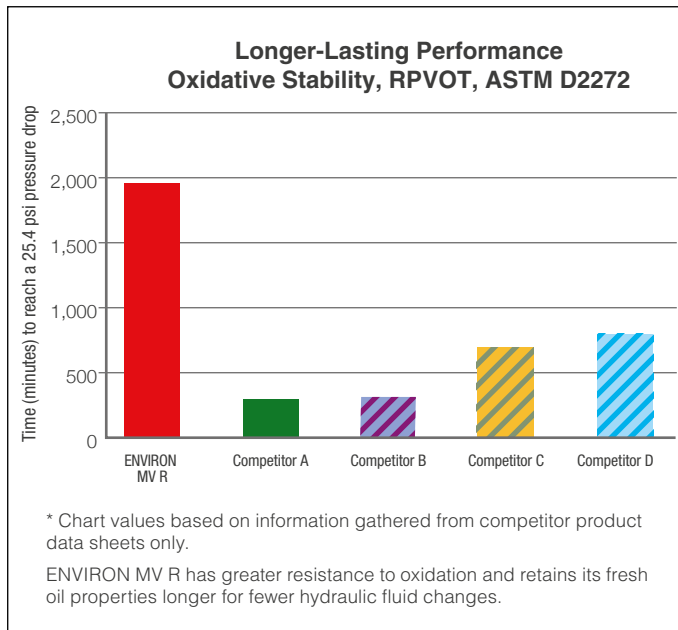
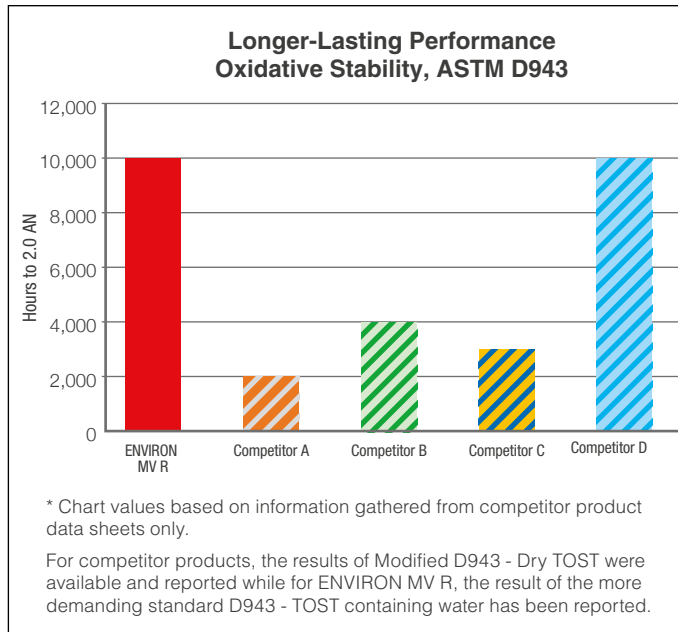
- Designed to deliver excellent long-lasting protection against wear, rust and corrosion
- Exceeds the performance requirements of conventional anti-wear hydraulic fluids and/or vegetable and unsaturated ester-based products

### Use under wide extremes of temperature

- Allows hydraulic systems to start up at temperatures as low as -36°C / -33°F (ENVIRON MV R 32)
- Provides excellent lubrication of hydraulic components at high operating temperatures
- Unlike vegetable oils, does not thicken and gel at moderately low temperatures

**Superior oxidation and thermal stability compared to competitive vegetable oil based, synthetic ester 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



**How ENVIRON MV R 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 R 32	MV R 46

**Excellent water separability and hydrolytic stability**

- Eases water removal and helps preserve the performance of the oil over a longer period of time

**Excellent foaming resistance and air release performance**

- Provides consistent lubrication film to ensure equipment protection and performance

**APPLICATIONS**

ENVIRON MV R hydraulic fluids are formulated for both indoor and outdoor use in piston, gear and vane hydraulic pumps found in industrial plant and mobile equipment used in environmentally sensitive areas and is well suited for hydraulic systems in hydroelectric dam operations. When ENVIRON MV R is used in systems equipped with fine porosity filters down to 3 microns, there is no loss of additives or filter plugging.

ENVIRON MV R 32 and 46 are approved against the following hydraulic OEM specifications:

- Parker Denison HF-0, HF-1, HF-2
- Eaton Brochure 03-401-2010 Rev 1

ENVIRON MV R fluids meet the requirements of the following industry standards:

- DIN 51524 Part 3 HVLP
- ISO 11158 HV

ENVIRON MV R fluids are suitable for use where Bosch Rexroth RDE 90220 specification is required and in equipment manufactured by Sauer-Danfoss, Racine, Oilgear, Hydreco, Dynex and others.

ENVIRON MV R fluids do not contain zinc-based antiwear additives so they can be used in hydraulic pumps with silver bearings, such as Lucas pumps, because they will not displace the silver in these bearings.

## TYPICAL PERFORMANCE DATA

Property	Test Method	ENVIRON MV R	
		32	46
Start-up Temperature <sup>1</sup> , °C / °F	–	-36 / -33	-33 / -27
Operating Range <sup>2</sup> , °C / °F	–	-15 to 76 / 5 to 169	-10 to 84 / 14 to 183
Mobile Equipment	–	-15 to 66 / 5 to 151	-10 to 74 / 14 to 165
Industrial Equipment	–		
Density, kg/L @ 15°C	D4052	0.841	0.848
Kinematic Viscosity, cSt @ 40°C	D445	32.45	43.99
cSt @ 100°C		6.62	8.17
SUS @ 100°F		165	224
SUS @ 210°F		48	54
Viscosity Index	D2270	165	162
Flash Point, COC, °C / °F	D92	213 / 415	229 / 444
Pour Point, °C / °F	D5950	-51 / -60	-48 / -54
Rust Prevention, Procedures A & B, 24 h	D665	Pass	Pass
Copper Corrosion 3 h @ 100°C / 212°F	D130	1b	1b
Water Separability @ 54°C / 129°F Oil-Water-Emulsion, (Minutes)	D1401	40-40-0 (10)	40-40-0 (10)
Air Release @ 50°C / 122°F, Minutes	D3427	3.0	3.0
Oxidation Stability, Hours to 2.0 AN	D943	10,000+	10,000+
Dielectric Breakdown Voltage, kV	D877	56	55
FZG Failure Load Stage (A/8.3/90)	D5182	> 12	> 12
Denison Hybrid T6H20C Pump Test	TP-30533	Pass	Pass
Eaton's Vickers 35VQ25 Vane Pump Test	Eaton ATS 373 D6973	Pass	Pass
Biodegradability, %	OECD 301B	> 60	> 60
Aquatic Acute Toxicity <sup>3</sup>			
EC50 (Algae), ppm (mg/L)	OECD 201	> 9,000	> 9,000
EC50 (Daphnia), ppm (mg/L)	OECD 202	> 10,000	> 10,000
LC50 (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 Lubricants 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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Committed to the disciplined operation of our business.



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