



ENVIRON™ AW HYDRAULIC FLUIDS

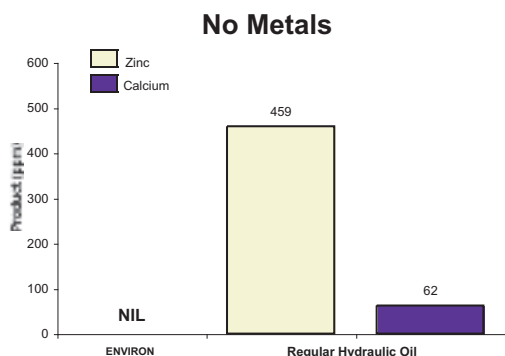
Introduction

Petro-Canada's ENVIRON AW hydraulic fluids are non-toxic, inherently biodegradable and recyclable and are therefore particularly suited for hydraulic applications in environmentally sensitive locations. ENVIRON AW hydraulic fluids are robust anti-wear straight grade hydraulic fluids designed for use in both mobile and stationary heavy duty hydraulic systems.

ENVIRON AW 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 AW 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 AW does not contain metal based additives.



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 (tested on daphnia and trout test protocols)
 - ENVIRON AW 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 20% biodegradable within a 28 day period
- **Excellent anti-wear, rust and corrosion protection**
 - Designed to meet or exceed the performance requirements of conventional anti-wear hydraulic oils

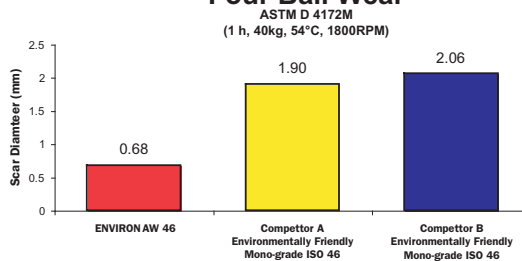
What is the HT difference?

Petro-Canada starts with the patented 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.

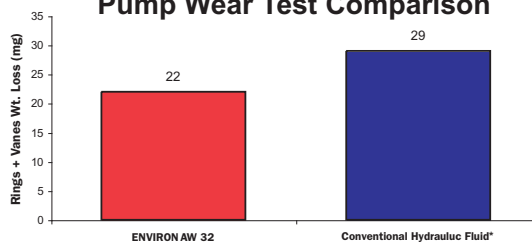


ENVIRON provides excellent wear protection

Four Ball Wear



Vickers 35VQ25 Hydraulic Pump Wear Test Comparison

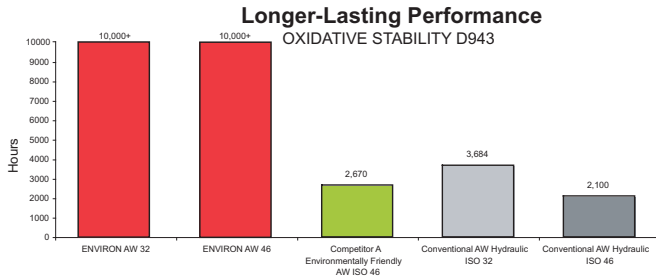


*Average of 13 products tested

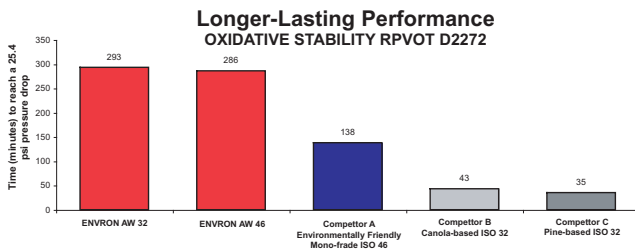
ENVIRON provides excellent wear protection

- **Outstanding 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



Note that the conventional AW Hydraulic grades are an average of several competitive products



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

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

Applications

Petro-Canada's ENVIRON AW hydraulic fluids are formulated for use within woodlands equipment, drilling, marine and mining operations as well as for use in industrial manufacturing plants.

ENVIRON AW meets the following hydraulic equipment manufacturers' specifications:

- Denison Vane and Piston Pump (HF-0)
- Eaton Vickers M-2950-S and I-286-S
- Cincinnati Machine P-68 (ISO 32), P-70 (ISO 46) and P-69 (ISO 68)
- GMLS 2 Approved

ENVIRON AW is recommended for use in equipment manufactured by Eaton (Vickers), Hagglunds, Denison, Sauer-Danfoss, (Mannesman) Bosch-Rexroth, Racine, Oilgear, Hydreco, Dynex and others.

ENVIRON AW 32, 46, 68 are suitable for use when a DIN 51524 Part 2 HLP or ISO 6743/4 Type HM fluid is called for.

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

Typical Performance Data

| PROPERTY | TEST METHOD | ENVIRON AW | | |
|---|----------------------------|--------------|--------------|--------------|
| | | AW 32 | AW 46 | AW 68 |
| Flash Point, °C / °F | D92 | 233/451 | 227/441 | 253/487 |
| Kinematic Viscosity, cSt @ 40°C | D445 | 32.1 | 46.1 | 67.9 |
| cSt @ 100°C | | 5.4 | 6.79 | 8.74 |
| SUS @ 100°F | | 166 | 237 | 352 |
| SUS @ 210°F | | 44 | 49 | 55 |
| Pour Point, °C / °F | D5950 | -42 / -44 | -36 / -33 | -33 / -27 |
| Rust, procedures A & B, 24 h | D665 | Pass | Pass | Pass |
| Copper Corrosion , 3 hr / 100°C / 212°F | D130 | 1B | 1B | 1B |
| Air Release, @ 50°C / 122°F, minutes | D3427 | 2.6 | 4.5 | 6.0 |
| Water Separability @ 54°C / 129°F, mL (min) | D1401 | 39-40-1 (15) | 40-40-0 (15) | 40-40-0 (10) |
| Oxidation stability, hours to 2.0 TAN | D943 | 10,000+ | 10,000+ | 5000+ |
| Hydrolytic Stability, copper loss, mg/cm ² | D2619 | 0.07 | 0.07 | 0.07 |
| Dielectric Breakdown Voltage, kV | D877 | 48 | 49 | 49 |
| Vickers 35VQ25 Vane Pump | Vickers M-2950-S | Pass | Pass | Pass |
| Denison Vane Pump, T-5D | Denison HF-0 | Pass | Pass | Pass |
| Denison Piston Pump, P-46 | Denison HF-0 | Pass | Pass | Pass |
| Biodegradability, % | | | | |
| Primary | CEC-L-33-T-93 OECD 301B | >40 >40 | >30 >30 | >20 >20 |
| Aquatic Acute Toxicity | | | | |
| EC ₅₀ (Daphnia),ppm | OECD 202 | 480 | 480 | 480 |
| LC ₅₀ (Trout), ppm | EPS 1/RM/9 July 90 | 20,000+ | 20,000+ | 20,000+ |
| LC ₅₀ (Inhibition), ppm | OECD 209 | 10,000 + | 10,000 + | 10,000 + |

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

Health and Safety

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

TechData Info Lines

If you would like to know more about Petro-Canada's ENVIRON AW, or any other product in our complete line of quality lubricants, please contact us at:

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