



## HYDREX™ AW Hydraulic Fluids

### Introduction

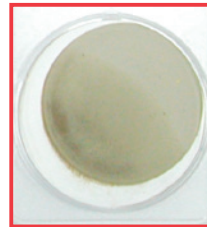
Petro-Canada's HYDREX AW hydraulic fluids are advanced formula, long life, anti-wear fluids designed for high performance hydraulic systems to provide excellent operating and maintenance benefits for increased productivity. HYDREX AW takes your equipment to higher levels of performance.

HYDREX AW hydraulic fluids start with the patented 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 AW retains its 'fresh oil' properties longer providing resistance to oxidative breakdown and outstanding wear protection.

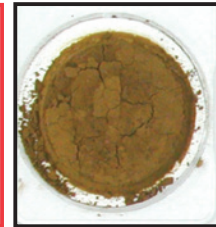
### Features and Benefits

- **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
  - Resists degradation (breakdown) in high temperatures reducing need for additive top up

- Decreases varnish build up that can interfere with servo and directional valve operation
- Minimizes harmful sludge build up in the reservoir that can lead to shortened oil life and equipment wear



HYDREX AW 46  
2,684 Hrs



Leading Global  
Competitor 32  
1,844 Hrs

*HYDREX demonstrates significantly lower sludge formation – even at longer test hours – reflecting outstanding oil quality†*

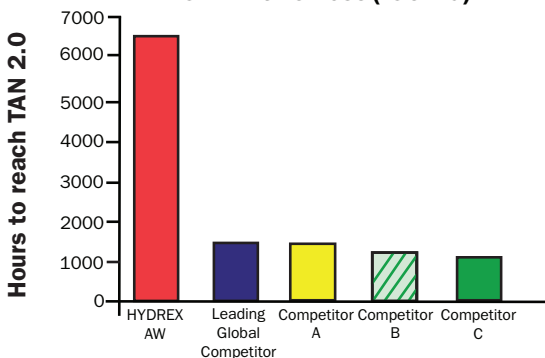
#### What is the HT difference?

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.



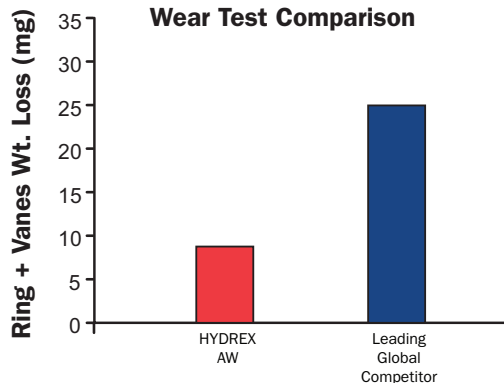
- **Exceptional anti-wear protection**
  - Extends equipment life
  - Reduces maintenance and mechanical failure
  - Protects equipment being driven longer, harder and faster in tougher conditions
  - Improves operating reliability over a wide range of pressure

#### Oxidation Life Comparison ASTM D943 Test (ISO 46)



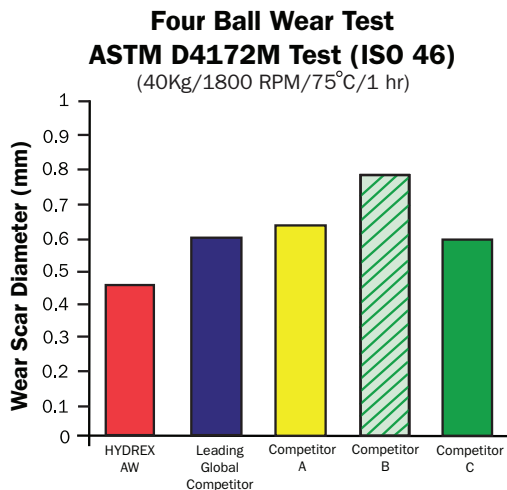
*HYDREX AW lasts 3x longer than the leading global competitor.*

#### Vickers 35VQ25 Hydraulic Pump Wear Test Comparison



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

† Based on modified ASTM D943 (although ASTM D943 does not typically involve fluid filtering, these samples were exposed to similar conditions as test ASTM D4310 which determines sludging and corrosion tendencies of oils).



*HYDREX demonstrates exceptional wear protection.*

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

## Applications

HYDREX AW hydraulic fluids are primarily recommended for heavy duty hydraulic systems that operate in industrial plants and outdoors in mobile equipment. HYDREX AW fluids may be used in systems equipped with fine filters down to 3 microns without loss of additives or causing filter plugging.

Because of their wide applicability, long life, rust and foaming inhibiting features, HYDREX AW fluids may also be used to lubricate anti-friction bearings and gears found in circulation, splash, bath and ring-oiled systems.

HYDREX AW fluids are approved against the following hydraulic equipment manufacturers’ specifications:

- Denison HF-0 (AW 32, 46, 68)
- Eaton Vickers M-2950-S and I-286-S
- MAG (formerly Cincinnati Machine) P-68 (AW 32), P-69 (AW 68) and P-70 (AW 46)
- Komatsu (AW 32, 46)
- Bosch-Rexroth RD 90220 (AW 22, 32, 46, 68, 100)
- Marlen Hydraulic Power Units (AW 68)

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

HYDREX AW 46 is recommended for use in the following injection moulding equipment manufacturers: Husky, Krauss-Maffei, Battenfeld, Demag, Soplax and Netstal.

HYDREX AW 46 is approved for use in Engel Injection Moulding Machines.

HYDREX AW is approved as per the following:

- HYDREX AW 32 Voith 3625-006072, 3625-006073 and 3625-008426
- HYDREX AW 46 Voith 3625-006208 and 3625-006209
- HYDREX AW 100 Voith 3625-006101

HYDREX AW 32 and 46 are GM LS2 approved.

HYDREX AW fluids are classified as CFIA Type N2 and NSF International H2.

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

- DIN 51524 Part 1 HL (AW 22)
- DIN 51524 Part 2 HLP (AW 32, 46, 68, and 100)
- ISO 6743/4 Type HM
- USS 127

## Typical Performance Data

| PROPERTY  | TEST METHOD | HYDREX AW       |                 |                 |                 |                 |                             |
|---|-------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------------------|
|   |             | 22              | 32              | 46              | 68              | 80              | 100                         |
| HYDREX Viscosity Grade  | –           | 22              | 32              | 46              | 68              | 80              | 100                         |
| Flash Point, °C / °F  | D92         | 207/405         | 217/423         | 227/441         | 225/437         | 245/473         | 250/482                     |
| Viscosity, cSt @ 40°C   | D445        | 21.6            | 34.5            | 46.6            | 65.7            | 80.0            | 100                         |
| cSt @ 100°C   |             | 4.3             | 5.7             | 6.9             | 9.4             | 9.7             | 11.3                        |
| SUS @ 100°F   |             | 113             | 178             | 240             | 338             | 416             | 521                         |
| SUS @ 210°F   |             | 40.5            | 45.0            | 49.0            | 57.6            | 58.7            | 64.6                        |
| Viscosity Index   | D2270       | 105             | 104             | 103             | 122             | 99              | 99                          |
| Pour Point, °C / °F   | D5950       | -45/-49         | -39/-38         | -33/-27         | -33/-27         | -24/-11         | -30/-22                     |
| Rust Procedures A & B, 24 hr  | D665        | Pass            | Pass            | Pass            | Pass            | Pass            | Pass                        |
| Oxidation Stability, hours  | D943        | 6500+           | 6500+           | 6500+           | 6500+           | 6500+           | 6500+                       |
| Oxidation Stability <sup>2</sup> , mg sludge                        | D4310       | Pass            | Pass            | Pass            | Pass            | Pass            | Pass                        |
| Hydrolytic Stability <sup>2</sup> , copper loss, mg/cm <sup>2</sup> | D2619       | Pass            | Pass            | Pass            | Pass            | Pass            | Pass                        |
| Dielectric Breakdown, Voltage, kV                                   | D877        | 44              | 39              | 40              | 44              | 44              | 44                          |
| Four-Ball Wear Test, Scar Diam. (mm)<br>40 kg, 1200 rpm, 75°C, 1 hr | D4172       | 0.5             | <0.4            | <0.4            | <0.4            | <0.4            | <0.4                        |
| Water Separability, 54°C / 129°F<br>mL water (minutes)              | D1401       | 40-40-0<br>(10) | 40-40-0<br>(25) | 40-40-0<br>(20) | 40-40-0<br>(20) | 40-38-2<br>(30) | 40-40-0<br>(5) <sup>1</sup> |

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

<sup>1</sup> At 82°C (180°F)

<sup>2</sup> Pass is defined as meeting the requirement of the Denison HF-0 specification. Oxidation Stability - 0.2 max and Hydrolytic Stability - 100 max.

## 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 HYDREX AW Hydraulic Fluid, or any other product in our complete line of quality lubricants, please contact us at:

**Lubricants Head Office**  
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2310 Lakeshore Road West  
Mississauga, Ontario  
Canada L5J 1K2



**Canada - West** . . . . . Phone 1-800-661-1199  
**- East (English)** . . . . . Phone 1-800-268-5850  
**(French)** . . . . . Phone 1-800-576-1686  
**Other Areas** . . . . . Phone (416) 730-2408  
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