



LUBRICANTS

## Powerflow™ NZ Hydraulic Oil

Phillips 66® Powerflow NZ Hydraulic Oil is a high-quality, zinc-free anti-wear hydraulic oil specifically developed for use in industrial and mobile equipment operating in environmentally sensitive areas. It is specially formulated for reduced environmental impact in case of leaks or spills. It is non-toxic to fish and aquatic species as determined by OECD Test Method 203 1-12, and is classified as inherently biodegradable by the OECD Test Method 301B. It passes the visual “no sheen” requirements of the U.S. EPA Static Sheen Test.

Powerflow NZ Hydraulic Oil is formulated with a zinc-free anti-wear additive package to provide excellent wear protection for hydraulic pumps and motors, and to protect hydraulic system components against rust and corrosion. It has excellent oxidation resistance and thermal stability at high temperatures to minimize deposit formation and provide long service life. It has excellent water-separating properties to minimize the formation of emulsions, and is resistant to excessive foam buildup that can cause poor or sluggish hydraulic system response.

Powerflow NZ Hydraulic Oil meets the performance requirements of all major hydraulic pump manufacturers, and is recommended for use in all types of high-pressure, high-speed hydraulic pumps.

### Applications

- Industrial and mobile systems operating at high temperatures and pressures in severe service
- Systems requiring enhanced load carrying capacity and thermal stability
- Environmentally sensitive applications where a non-toxic, inherently biodegradable, non-sheening fluid is preferred
- Plastic injection molding presses (ISO 46)
- Electric motor bearings

Powerflow NZ Hydraulic Oil meets the requirements of the following industry and OEM specifications:

- Husky Injection Molding Systems (approved, ISO 46)
- Kraus Maffei Hydraulic Oil (ISO 46)
- Bosch Rexroth RDE 90235 and is listed on the Bosch Rexroth Fluid Rating List RDE 90245
- DIN 51524 Part 2, Anti-wear Hydraulic Oils, Type HLP
- JCMAS P 041 (HK VG32, HK VG46)
- Parker Hannifin (Denison) HF-0, HF-1, HF-2 (approved ISO 32, 46, and 68)
- Eaton-Vickers I-286-S, M-2950-S, 35VQ25A anti-wear performance (brochure 03-401-2010 Rev 1 ISO 32, 46, and 68)
- Fives Cincinatti P-68 (ISO VG 32), P-70 (ISO VG 46), P-69 (ISO VG 68) (approved)
- German Steel Industry SEB 181222
- ISO 11158:1997, Family H (Hydraulic Systems), Type HM
- U.S. Steel 127
- U.S. EPA/U.S. Coast Guard Static Sheen Test, Federal Register Vol. 58, No.41

**Non-toxic,  
Zinc-Free Anti-  
wear Hydraulic  
Oil; Inherently  
Biodegradable**

**KEEPING THE  
WORLD  
RUNNING  
SMOOTHLY.**





## Features/Benefits

- Excellent oxidation resistance and thermal stability
- Protects against rust and corrosion (reduced sludge and deposit formation)
- Excellent water-separating properties
- Excellent wear protection for hydraulic pumps and motors
- Improved product compatibility with traditional zinc-based products
- Outstanding air release properties
- Inherently biodegradable
- Non-toxic to aquatic organisms

**Note:** Powerflow™ NZ Hydraulic Oil is compatible with most zinc-containing hydraulic oils, however, mixing the two products will lessen the environmental and performance benefits normally gained by using Powerflow™ NZ Hydraulic Oil.

## Powerflow™ NZ Hydraulic Oil

| Typical Properties                                                       |           |           |           |
|--------------------------------------------------------------------------|-----------|-----------|-----------|
| ISO Grade                                                                | 32        | 46        | 68        |
| Specific Gravity @ 60°F                                                  | 0.861     | 0.865     | 0.868     |
| Density, lbs/gal @ 60°F                                                  | 7.17      | 7.21      | 7.23      |
| Color, ASTM D1500                                                        | 0.5       | 0.5       | 1.0       |
| Flash Point (COC), °C (°F)                                               | 227 (440) | 240 (464) | 256 (493) |
| Pour Point, °C (°F)                                                      | -39 (-38) | -36 (-33) | -33 (-27) |
| Viscosity                                                                |           |           |           |
| cSt @ 40 °C                                                              | 32.0      | 46.0      | 68.0      |
| cSt @ 100 °C                                                             | 5.5       | 6.9       | 8.9       |
| SUS @ 100 °F                                                             | 150       | 214       | 315       |
| SUS @ 210 °F                                                             | 44.3      | 48.8      | 55.6      |
| Viscosity Index                                                          | 108       | 105       | 104       |
| Acid Number, ASTM D974, mg KOH/g                                         | 0.22      | 0.22      | 0.22      |
| Copper Corrosion, ASTM D130                                              | 1a        | 1a        | 1a        |
| Demulsibility, ASTM D1401, minutes to pass                               | 10        | 10        | 10        |
| Dielectric Strength, ASTM D877, kV <sup>(1)</sup>                        | 35        | 35        | 35        |
| Foam Test, ASTM D892, Seq. I, mL                                         | 0/0       | 0/0       | 0/0       |
| FZG Scuffing Test, ASTM D5182, Failure Load Stage                        | >12       | >12       | >12       |
| Oxidation Stability                                                      |           |           |           |
| TOST, ASTM D943-04a, hours                                               | 10,000+   | 10,000+   | 10,000+   |
| Rust Test, ASTM D665 A&B                                                 | Pass      | Pass      | Pass      |
| Aquatic Toxicity, Rainbow Trout, OECD 203 1-12, 1000mg/L, 96 hours, LC50 | Non-toxic | Non-toxic | Non-toxic |
| Biodegradability in 28 days, OECD 301B, %                                | 20 - 59   | 20 - 59   | 20 - 59   |

<sup>(1)</sup>Note: At the point of manufacture

## Health & Safety Information

For recommendations on safe handling and use of this product, please refer to the Safety Data Sheet via <http://www.phillips66.com/SDS>.

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Typical properties are average values only and do not constitute a specification. Minor variations that do not affect product performance are to be expected during normal manufacture, and at different blending locations. Product formulations are subject to change without notification.

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