



LUBRICANTS

Powerflow™ NZ Hydraulic Oil

(Replaces Ecoterra Hydraulic Oil)

Phillips 66® Powerflow NZ Hydraulic Oil is a high-quality, zinc-free antiwear 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 antiwear 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 is recommended for use in place of conventional zinc-containing hydraulic oils in applications where there is the possibility of soil or water contamination. It also may be used as a lower-cost alternative to synthetic, readily biodegradable hydraulic fluids. It 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

- Hydraulic systems where the equipment manufacturer specifies a zinc-free antiwear hydraulic oil
- Hydraulic equipment used in environmentally sensitive areas, such as national parks, wildlife refuges, ski resorts and other recreational areas
- Plastic injection molding presses (ISO 46)
- Oil drilling rigs and offshore platforms
- Marine cargo winches and steering systems
- 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 RE 90220, Type HLP
- DIN 51524 Part 2, Antiwear Hydraulic Oils, Type HLP
- 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

Non-toxic, Zinc-Free Antiwear Hydraulic Oil; Inherently Biodegradable

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WORLD
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- U.S. Steel 127
- U.S. EPA/U.S. Coast Guard Static Sheen Test, Federal Register Vol. 58, No.41

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 ⁽¹⁾	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

⁽¹⁾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>.