



LUBRICANTS

## Powerflow<sup>®</sup> NZ HE-E Hydraulic Oil

(Replaces Ecoterra HVI-E Hydraulic Oil)

Phillips 66<sup>®</sup> Powerflow NZ HE-E Hydraulic Oil is a high-quality, high viscosity index, zinc-free antiwear hydraulic oil developed for use in mobile equipment operating over a wide temperature range and in wet environments. It is specially formulated to emulsify readily with water to maintain effective lubrication in the presence of water. It is particularly recommended for use in off-road equipment manufactured by Hitachi, John Deere and others, operating under conditions where an emulsifiable hydraulic oil is specified or preferred.

Powerflow NZ HE-E 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 low-temperature properties for cold start-ups. This fluid is also resistant to excessive foam buildup that can cause poor or sluggish hydraulic system response.

Powerflow NZ HE-E Hydraulic Oil has a high viscosity index and low pour point for use over a wider temperature range than conventional antiwear hydraulic oils. Its high viscosity index helps maintain oil viscosity at operating temperatures and reduce energy (power) loss caused by internal oil leakage in the hydraulic system, resulting in up to 6% higher system efficiency compared to conventional single-grade hydraulic oils.

Powerflow NZ HE-E 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. It also meets the performance requirements of Hitachi Advanced Hydraulic Oil, and is fully compatible with the Hitachi fluid and with Hitachi seals and hoses.

### Applications

- Off-road mobile construction and forestry equipment, such as backhoes, bulldozers, crawlers, excavators, skid-steer loaders and motor graders, where the manufacturer recommends an emulsifiable, zinc-free hydraulic oil
- Hitachi construction equipment with 5,000-hour service intervals

Powerflow NZ HE-E Hydraulic Oil meets the requirements (except demulsibility) of the following industry and OEM specifications:

- Bosch Rexroth RE 90220, Type HVLP
- DIN 51524 Part 3, Antiwear Hydraulic Oils, Type HVLP
- Parker Hannifin (Denison) HF-0, HF-1, HF-2
- Eaton-Vickers M-2950-S, I-286-S
- German Steel Industry SEB 181222
- Hitachi Advanced Hydraulic Oil (ISO VG 46)
- ISO 11158:1997, Family H (Hydraulic Systems), Type HV
- U.S. Steel 127

**High-Efficiency,  
High VI, Zinc-  
Free Antiwear  
Hydraulic Oil  
for Off-Road  
Equipment;  
Emulsifies with  
Water**

KEEPING THE  
WORLD  
RUNNING  
SMOOTHLY. 



## Features/Benefits

- Emulsifies readily with water
- High VI to reduce internal oil leakage and increase hydraulic system efficiency by up to 6% compared to conventional single-grade hydraulic oils
- Excellent oxidation resistance and thermal stability
- Protects against rust and corrosion (reduced sludge and deposit formation)
- Excellent wear protection for hydraulic pumps and motors
- Improved product compatibility with traditional zinc-based products
- Good filterability
- Suitable for year-round use

## Powerflow® NZ HE-E Hydraulic Oil

Typical Properties	
<b>ISO Grade</b>	<b>46</b>
Specific Gravity @ 60°F	0.868
Density, lbs/gal @ 60°F	7.23
Color, ASTM D1500	0.5
Flash Point (COC), °C (°F)	203 (397)
Pour Point, °C (°F)	-51 (-60)
Viscosity	
cSt @ 40 °C	46.0
cSt @ 100 °C	8.6
SUS @ 100 °F	214
SUS @ 210 °F	54.5
Viscosity Index	168
Copper Corrosion, ASTM D130	1b
Demulsibility, ASTM D1401, 30 minutes @ 54°C	
Emulsion, mL	80
Free Water, mL	0
Foam Test, ASTM D892, Seq. I, mL	0/0
FZG Scuffing Test, ASTM D5182, Failure Load Stage	12
Oxidation Stability, TOST, ASTM D943-04, hours	>7000
Rust Test, ASTM D665 A&B	Pass

## 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/EN/products/Pages/MSDS.aspx>.

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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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