



LUBRICANTS

## Powerflow™ HE Hydraulic Oil

Phillips 66® Powerflow HE Hydraulic Oil is a premium quality, high viscosity index anti-wear hydraulic oil developed for use in industrial and mobile equipment operating in cold climates or in locations subject to wide variations in ambient temperatures. 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. It is particularly recommended for year-round use in mobile equipment such as bucket trucks, cranes and aerial lifts.

Powerflow HE Hydraulic Oil is specially formulated to have a high viscosity index and a low pour point for use over a wider temperature range than conventional anti-wear 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 HE provides excellent wear protection for hydraulic pumps and motors, has excellent oxidation resistance and thermal stability at high temperatures to minimize deposit formation and provide long service life, and protects hydraulic system components against rust and corrosion. 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. It has excellent low-temperature properties for cold start-ups. It also has a high dielectric strength for use as insulating oil in electrical service bucket trucks.

### Applications

- Industrial and mobile equipment operating in cold weather or in locations subject to wide temperature fluctuations
- Bucket trucks (cherry pickers) used for servicing electrical power lines or for tree-trimming
- Hydraulic hoists and service station lifts
- Marine cargo winches and steering systems
- Off-road construction, mining and marine equipment
- Chain drives
- Electric motor bearings

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

- DIN 51524 Part 3, Anti-wear Hydraulic Oils, Type HVLP
- Eaton-Vickers M-2950-S, I-286-S
- ISO 11158:1997, Family H (Hydraulic Systems), Type HV
- Parker Hannifin (Denison) HF-0, HF-1, HF-2

**Premium High-Efficiency, High VI Anti-wear Hydraulic Oil for Wide Temperature Ranges**

KEEPING THE  
WORLD  
RUNNING  
SMOOTHLY. 



## Features/Benefits

- High VI to reduce internal oil leakage and increase hydraulic system efficiency by up to 6% compared to conventional single-grade hydraulic fluids
- Excellent service over a wide temperature range
- Excellent wear protection for hydraulic pumps and motors
- Excellent oxidation resistance and thermal stability
- High shear stability
- Protects against rust and corrosion
- Excellent water-separating properties
- Good foam resistance
- Excellent low-temperature properties for cold start-ups
- High dielectric strength for use in electrical service bucket trucks (cherry pickers)<sup>(1)</sup>

<sup>(1)</sup> **Note:** In order to maintain its high dielectric strength for use as electrical insulating oil, the oil must be kept clean and dry. Contamination with water will significantly decrease the dielectric strength.

## Powerflow™ HE Hydraulic Oil

Typical Properties			
ISO Grade	32	46	68
Specific Gravity @ 60°F	0.862	0.867	0.870
Density, lbs/gal @ 60°F	7.18	7.22	7.24
Color, ASTM D1500	0.5	0.5	0.5
Flash Point (COC), °C (°F)	204 (399)	216 (421)	227 (441)
Pour Point, °C (°F)	-51 (-60)	-43 (-45)	-36 (-33)
Viscosity			
cSt @ 40 °C	32.0	46.0	68.0
cSt @ 100 °C	6.7	8.6	11.6
SUS @ 100 °F	150	214	315
SUS @ 210 °F	48.2	54.5	65.0
Viscosity Index	173	171	166
Acid Number, ASTM D974, mg KOH/g	0.60	0.60	0.60
Copper Corrosion, ASTM D130	1a	1a	1a
Demulsibility, ASTM D1404, minutes to pass	10	10	10
Dielectric Strength, ASTM D877, kV <sup>(2)</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
Oxidation Stability			
TOST, ASTM D943-04a, hours	>7,000	>7,000	>7,000
Rust Test, ASTM D665 A&B	Pass	Pass	Pass
Zinc, wt %	0.066	0.066	0.066

<sup>(2)</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/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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