



LUBRICANTS

## Powerflow™ AW Hydraulic Oil

Phillips 66® Powerflow AW Hydraulic Oil is a premium quality anti-wear hydraulic oil developed for use in a wide variety of industrial and mobile hydraulic systems operating under high-pressure, high-temperature conditions. It is formulated to provide enhanced wear protection and deposit control for severe service applications. It is particularly recommended for use in plastic injection molding machines where deposit control in the hydraulic circuit of the electro-pneumatic servo valves is essential for trouble-free operation.

Powerflow AW Hydraulic Oil is formulated 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 AW 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

- Plastic injection molding machines
- Automated machine tools
- Elevators, hoists, presses and floor jacks
- Marine cargo winches and steering systems
- Mobile construction equipment
- Service station lifts
- Air tools and other pneumatic equipment lubricated through air line lubricators
- Chain drives
- Electric motor bearings

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

- Bosch Rexroth RE 90220, Type HLP
- DIN 51524 Part 2, Anti-wear 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 antiwear performance (brochure 03-401-2010 Rev 1 ISO 32, 46, and 68)
- Fives Cincinnati 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

**Premium Anti-wear Hydraulic Oil for Plastic Injection Molding Machines**

KEEPING THE  
WORLD  
RUNNING  
SMOOTHLY. 



## Features/Benefits

- Outstanding performance in plastic injection molding machines
- Excellent wear protection for hydraulic pumps and motors
- Excellent oxidation resistance and thermal stability
- Excellent deposit control
- Protects against rust and corrosion
- Excellent water-separating properties
- Good foam resistance

## Powerflow™ AW Hydraulic Oil

Typical Properties				
ISO Grade	32	46	68	100
Specific Gravity @ 60°F	0.863	0.869	0.874	0.878
Density, lbs/gal @ 60°F	7.18	7.24	7.28	7.31
Color, ASTM D1500	0.5	0.5	0.5	0.5
Flash Point (COC), °C (°F)	216 (421)	221 (430)	238 (460)	254 (489)
Pour Point, °C (°F)	-37 (-35)	-36 (-33)	-36 (-33)	-29 (-20)
Viscosity				
cSt @ 40 °C	32.0	46.0	68.0	100
cSt @ 100 °C	5.4	6.8	8.7	11.3
SUS @ 100 °F	150	214	315	463
SUS @ 210 °F	44.0	48.5	54.9	63.9
Viscosity Index	102	102	99	99
Acid Number, ASTM D974, mg KOH/g	0.60	0.60	0.60	0.60
Copper Corrosion, ASTM D130	1a	1a	1a	1a
Demulsibility, ASTM D1401, minutes to pass	10	10	10	10
Foam Test, ASTM D892, Seq. I, mL	0/0	0/0	0/0	0/0
FZG Scuffing Test, ASTM D5182				
Failure Load Stage	12	12	12	12
Oxidation Stability				
TOST, ASTM D943-04a, hours	>7,500	>7,500	>7,500	>7,500
Rust Test, ASTM D665 A&B	Pass	Pass	Pass	Pass
Zinc, wt %	0.066	0.066	0.066	0.066

## 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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