



## Gear Shield®

Phillips 66® Gear Shield is an adhesive, residual compounded, extreme pressure (EP) gear lubricant with a low viscosity sacrificial diluent for ease of application. It is recommended primarily for the lubrication and cushioning of open and semi-enclosed gears found on stationary equipment, such as SAG mills, ball/rod mills, kilns and paper mills. It also may be used for the lubrication of some cable-actuated equipment, such as marine winches.

Gear Shield is specially formulated to provide high load-carrying capacity to protect heavily loaded gears from scoring and galling. In operation the diluent is used to carry dirt and debris away from the working face of the gear. The remaining product forms a tenacious film that adheres well to metal surfaces and will not harden or flake off at low temperatures. This film has good resistance to water washout and protects the gears against rust and corrosion.

Gear Shield is available in three grades for use over a wide range of operating temperatures.

### Applications

- Open and semi-enclosed gears, such as those found on mining ball and rod mills, cement mills, drying kilns, and paper-making machinery and presses
- Mills used to process minerals such as gold, copper, iron, taconite and phosphate
- Guides and sliding surfaces with large clearances, where asphaltic-type lubricants are specified

Gear Shield meets the requirements of the following industry specification:

- ANSI/AGMA Standard 9005-E02

### Features/Benefits

- Excellent adhesion to metal surfaces
- Forms a heavy, tenacious film to lubricate and cushion gear teeth
- Good extreme-pressure properties for protection under heavy or shock loads
- Good resistance to water washout
- Protects against rust and corrosion
- Will not flake off at low temperatures
- Drains freely from gear guards
- Does not contain any chlorine, lead or carcinogens
- Easy application, by spraying, brushing or dripping
- Suitable for use with automatic lubrication equipment

**Residual  
Compounded  
Open Gear  
Lubricant for  
Mills, Kilns and  
other Stationary  
Equipment**





**Gear Shield®**

Typical Properties				
Grade		NCW	P	NC
Specific Gravity @ 60°F		0.960	0.920	0.960
Density, lbs/gal @ 60°F		8.00	7.66	8.00
Color	Visual	Black	Black	Black
Appearance	Visual	Viscous	Viscous	Viscous
Consistency	Visual	Semi-fluid	Semi-fluid	Semi-fluid
Flash Point (COC), with diluent, °C (°F)	ASTM D92	>93 (>199)	>121 (>250)	>121 (>250)
Flash Point (COC), without diluent, °C (°F)	ASTM D92	>260 (>500)	>260 (>500)	>260 (>500)
Diluent Content, wt %		23	12	16
Viscosity (with diluent)				
cSt @ 40°C	ASTM D445	900	5,800-6,800	6,000
SUS @ 100°F	Calculated	4,150	26,800-31,500	27,700
Viscosity (without diluent)				
cSt @ 100°C	ASTM D445	1,600	1,150-1,350	1,600
SUS @ 210°F	Calculated	7,400	5,300-6,200	7,400
Copper Corrosion	ASTM D130	4b	2b	4b
Four-Ball EP	ASTM D2596			
Weld Load, kgf		400	400	400
Load-Wear Index, kgf		77	70	77
Four-Ball Wear, Scar Diameter, mm	ASTM D2266	0.49	0.60	0.49
FZG Scuffing Test, Failure Load Stage	ASTM D5182	>12	>12	>12
Rust Test	ASTM D665	Pass	Pass	Pass
Timken OK Load, lb	ASTM D2509	45	45	45
Recommended Application Temperature	Lincoln Ventmeter			
°C		-18 to 49	-9 to 49	0 to 49
°F		0 to 120	15 to 120	32 to 120

**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>.

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.