



## GLW-E

Phillips 66® GLW-E is a premium quality, extreme-pressure (EP) industrial gear oil developed for the lubrication of heavily loaded enclosed gear drives operating in wet environments under severe service conditions. 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 industrial and mining equipment operating in a highly contaminated, wet environment where an emulsifiable AGMA EP gear oil is specified or preferred.

GLW-E is formulated to provide excellent lubricity and wear protection even in the presence of water and other contaminants. It has high load-carrying capacity, retains its high film strength in the presence of water, and protects against rust and corrosion for extended equipment life. It has good oxidation resistance and thermal stability at high temperatures and is formulated with “clean gear” additive technology to minimize deposit formation and provide outstanding gearbox cleanliness. It has good seal compatibility, will emulsify readily with water and is resistant to excessive foam buildup that can interfere with proper lubrication.

GLW-E is recommended for use in Joy Machinery longwall mining equipment as well as other mining, industrial and heavy mobile equipment operating under extreme loads and/or exposed to water contamination.

### Applications

- Enclosed gear drives of longwall mining machinery
- Enclosed industrial gear drives operating in the presence of water, such as in steel mills and rock quarries
- Gear drives and pinion stands of metal rolling mills, ball mills and cement mills
- Enclosed gear drives on excavation and heavy construction equipment

GLW-E meets the requirements (except demulsibility) of the following industry and OEM specifications:

- ANSI/AGMA Standard 9005-E02, Anti-Scuff/Anti-Wear (EP) Oils
- DIN 51517 Part 3, Lubricating Oils, Type CLP
- German Steel Industry SEB 181226, Type CLP
- ISO 12925-1, Type L-CKC & Type L-CKD
- Joy Mining Machinery TO-MEP (ISO VG 220), TO-HEP (ISO VG 320), TO-HD (ISO VG 460)
- U.S. Steel 224

### Features/Benefits

- Excellent performance in wet or contaminated gearboxes
- Outstanding load-carrying capacity
- Excellent protection against scuffing and wear

**Severe-Duty,  
Extreme-  
Pressure  
Industrial Gear  
Oil; Emulsifies  
with Water**

**KEEPING THE  
WORLD  
RUNNING  
SMOOTHLY.**





- Good oxidation resistance and thermal stability
- Outstanding deposit control for gearbox cleanliness
- Protects against rust and corrosion
- Emulsifies readily with water
- Good seal compatibility
- Environmentally responsible; does not contain chlorinated paraffins

## GLW-E

Typical Properties			
ISO Grade	220	320	460
AGMA Grade	5 EP	6 EP	7 EP
Specific Gravity @ 60°F	0.890	0.893	0.898
Density, lbs/gal @ 60°F	7.41	7.44	7.47
Color, ASTM D1500	3.0	5.0	5.0
Flash Point (COC), °C (°F)	249 (480)	254 (489)	255 (491)
Pour Point, °C (°F)	-18 (0)	-18 (0)	-15 (5)
Viscosity			
cSt @ 40°C	220	320	460
cSt @ 100°C	18.9	23.7	31.7
SUS @ 100°F	1,164	1,723	2,459
SUS @ 210°F	96.4	118	155
Viscosity Index	96	93	100
Acid Number, ASTM D974, mg KOH/g	1.09	1.09	1.09
Copper Corrosion, ASTM D 130	1b	1b	1b
Demulsibility, ASTM D1401, 60 minutes @ 180°F			
Free Water, mL	0	0	0
Foam Test, ASTM D892, Seq. I, mL	0/0	0/0	0/0
Four-Ball EP, ASTM D2783			
LWI, kgf	57	57	57
Weld Load, kgf	315	315	315
Four-Ball Wear, ASTM D4172, Scar Diameter, mm	0.26	0.26	0.26
FZG Scuffing Test, ASTM 5182 (mod.), Failure Load Stage	>14	>14	>14
Oxidation Stability, ASTM D2893			
Viscosity Increase @ 121°C, %	5.5	5.5	5.5
Rust Test, ASTM D655 A&B	Pass	Pass	Pass
Timken OK Load, ASTM D2782, lb	70	70	70

## 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>.