



## GLW 220, 320 & 460

Conoco GLW 220, 320 & 460 are premium quality, extreme pressure, longwall mining gear lubricants specifically developed for the lubrication of gearboxes of Joy Machinery mining equipment and other mining and construction equipment operating under extreme loads and in a heavily-contaminated, wet environment.

GLW 220, 320 & 460 maintain gear cleanliness, improved seal life and improved gearbox deposit control in presence of heavy contamination. They also retain their high film strength, resulting in extended equipment service life.

GLW 220, 320 & 460 are manufactured with high viscosity-index paraffinic base oils and fortified with chlorine-free proprietary additives to provide excellent lubricity for the gears and bearings in presence of water and contaminants.

### **Applications**

- Enclosed gearboxes of longwall mining machinery
- Enclosed industrial gearboxes operating in 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 gearboxes of heavy construction and excavation equipment

GLW 220, 320 & 460 meet the performance requirements of:

- Joy Mining Machinery transmission oil specifications TO-MEP (ISO VG 220), TO-HEP (ISO VG 320) and TO-HD (ISO VG 460)

### **Outstanding Features**

- Chlorine-free for reduced environmental impact
- Outstanding load-carrying capacity
- Excellent protection against scuffing and wear
- Excellent rust and corrosion protection
- Good thermal and oxidative stability
- Excellent lubricity
- Improved gear service life and gearbox cleanliness
- Improved seal life
- Improved performance in wet or contaminated gearboxes

**Severe-Duty  
Lubricants For  
Enclosed  
Gearboxes**

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## GLW 220, 320 & 460

### Typical Properties

ISO Grade	220	320	460
AGMA Grade	5 EP	6 EP	7 EP
JM Specification	TO-MEP	TO-HEP	TO-HD
Specific Gravity @ 15.6°C (60°F)	0.888	0.891	0.895
Density, lbs/gal	7.41	7.44	7.46
Color, ASTM D1500	4.5	5.0	5.5
Flash Point (COC), °C (°F)	249 (480)	254 (489)	256 (493)
Pour Point, °C (°F)	-27 (-17)	-18 (0)	-15 (5)
Viscosity,			
cSt @ 40°C	212	323	450
cSt @ 100°C	18.7	23.7	30.2
SUS @ 100°F	1,174	1,722	2,352
SUS @ 210°F	94	118	144
Viscosity Index	95	97	96
Acid Number, ASTM D974, mg KOH/g	1.09	1.09	1.09
Copper Corrosion, ASTM D130	1b	1b	1b
Demulsibility, ASTM D1401,			
30 minutes @ 180°F, ml	42-38-0	42-38-0	42-38-0
Falex Pin & Vee Block True Load, ASTM D3233-B, lbf	>4,250	>4,250	>4,250
Four-Ball EP, ASTM D2783,			
LWI, kgf	57	57	57
Weld Load, kgf	315	315	315
FZG Gear Test, ASTM D5182, Pass Stage	12	12	12
Rust Test, ASTM D665 B	Pass	Pass	Pass
Timken OK Load, ASTM D2782, lb	70	70	70

Due to continual product research and development, the information contained herein is subject to change without notification.

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