



Product Bulletin

EP INDUSTRIAL GEAR LUBRICANTS

BRAD PENN® EP Industrial Gear Lubricants are formulated with high quality *PENN-GRADE™* base oils and an effective sulfur-phosphorous EP (extreme pressure) additive system designed to minimize wear of enclosed gears and other equipment operating under heavy loads and shock conditions.

BRAD PENN® EP Industrial Gear Lubricants utilize high viscosity index (HVI) base oils that impart high flash points, low volatility, and superior oxidation stability. They provide outstanding protection in industrial gear sets operating under severe conditions such as intermittent shock loads, high peak loads, and heavy tooth loads. Additionally, they offer the following benefits:

- Superior bearing protection
- Excellent anti-foam protection
- Excellent rust and corrosion protection
- Outstanding demulsibility characteristics
- Resistance to oxidative sludge and varnish formation
- Protection from galling, scuffing, and welding of gear teeth
- Non-corrosive to bronze, brass, copper and other copper alloy parts

BRAD PENN® EP Industrial Gear Lubricants are categorized by the American Gear Manufacturers Association (AGMA) for use in a wide variety of industrial gear sets. They are ideal for heavily loaded enclosed industrial gear sets where extreme pressure properties and adequate film strength are critical for component protection. They are recommended for a variety of gears including spur, bevel, helical, worm, and industrial hypoid gear cases, as well as plain, ball, roller, and sleeve type bearings. They may also be recommended for the lubrication of slides, ways, sprockets, chain drives, winches, hoists, and machine tools. Additionally, these industrial gear oils meet the following performance requirements (for the appropriate viscosity grades):

- US Steel 224
- AGMA 250.04, 251.02
- AGMA 9005-E02
- DIN 51517, Part 3
- Cincinnati Machine
- David Brown S1.53.101



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BRAD PENN[®]
EP Industrial Gear Lubricants – Typical Properties

ISO Viscosity Grade		68	100	150	220	320	460
AGMA Grade	Test Method	2 EP	3 EP	4 EP	5 EP	6 EP	7 EP
API Gravity, 60°F	ASTM D-1298A	29.6	29.0	28.2	28.0	27.3	27.0
Density, lbs/gal (g/L)	Calculated	7.30 (875)	7.33 (878)	7.37 (883)	7.40 (887)	7.44 (891)	7.45 (893)
Viscosity, cSt @ 40°C	ASTM D-445	68.0	100.0	150.0	220.0	320.0	460.0
Viscosity, cSt @ 100°C	ASTM D-445	8.6	11.0	14.4	18.7	23.8	30.0
Viscosity, SUS @ 100°F	ASTM D-2161	353	523	789	1,164	1,706	2,469
Viscosity, SUS @ 210°F	ASTM D-2161	55.2	63.9	77.3	95.5	118.4	147.3
Viscosity Index	ASTM D-2270	97	96	95	95	95	95
Pour Point, °F (°C)	ASTM D-5949	5 (-15)	5 (-15)	10 (-12)	10 (-12)	10 (-12)	15 (-9)
Flash Point, COC, °F (°C)	ASTM D-92	430 (221)	440 (226)	460 (236)	460 (236)	500 (260)	550 (286)
Color	ASTM D-1500	5.5	6.0	6.5	7.5	L 8.0	L 8.0
FZG Scuffing Test, stages	ASTM D-5182	12	12	12	12	12	12
Four-Ball Wear Test, mm	ASTM D-2266	0.27	0.26	0.26	0.27	0.26	0.23
Four-Ball EP Test Load-Wear Index (LWI), kgf Weld Point, kgf	ASTM D-2783	47 250	47 250	47 250	54 250	65 250	66 250
Timken OK Load, lbs	ASTM D-2782	60	60	60	65	65	75
Cincinnati Machine		P-63	P-76	P-77	P-74	P-59	P-35
Product Code		7787	7788	7789	7790	7791	7792