

TEC-GUARD

DEFEND

SYNTHETIC EXTREME-PRESSURE GEAR OIL

DESCRIPTION

ISO 68, 100, 150, 220, 320, 460 & 680

Tec-Guard Defend Synthetic EP Gear Oils are full synthetic oil engineered for enclosed industrial gearboxes operating under extreme pressures and/or temperatures and shock loads. Formulated with thermally stable extreme-pressure (EP) additives.

BENEFITS

- Proven wear and micropitting protection
- Dampens shock-loads and delivers excellent wear protection for gears and bearings
- Exceeds a wide range of performance specifications for versatility and convenience
- Resists heat and deposits for superior gear and bearing cleanliness
- Low pour points provide reliable cold-temperature start-up efficiency and lubrication
- Excellent seal compatibility helps reduce leaks and extend seal life
- Filtered to a 14/11 level at the time of packaging (ISO68 - ISO320)

TECHNICAL DATA

| TYPICAL CHARACTERISTICS | METHODS | DEFEND SYNTHETIC EP GEAR OIL | | | | | | |
|-------------------------------------|-----------------|------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | 68 | 100 | 150 | 220 | 320 | 460 | 680 |
| AGMA Grade | | 2EP | 3EP | 4EP | 5EP | 6EP | 7EP | 8EP |
| Viscosity @ 100°C, cSt | ASTM D 445 | 11.5 | 14.6 | 19.7 | 26.8 | 35.7 | 49.2 | 74.3 |
| Viscosity @ 40°C, cSt | ASTM D 445 | 71.7 | 100.4 | 149.1 | 222.1 | 324.1 | 457.4 | 678.6 |
| Viscosity Index | ASTM D 2270 | 153 | 151 | 152 | 155 | 156 | 168 | 190 |
| Specific Gravity (g/ml) | ASTM D1298 | 0.8529 | 0.8571 | 0.8607 | 0.8654 | 0.8676 | 0.8686 | 0.8633 |
| Density (lbs./gal) | ASTM D 1298 | 7.102 | 7.137 | 7.167 | 7.207 | 7.224 | 7.233 | 7.189 |
| Color | ASTM D1500 | L0.5 | L0.5 | L0.5 | L0.5 | L0.5 | L0.5 | L0.5 |
| Flash Point, °C (F) (COC) | ASTM D 92 | 238 (460) | 236 (457) | 238 (460) | 238 (460) | 246 (475) | 244 (471) | 250 (482) |
| Fire Point, °C (F) (COC) | ASTM D 92 | 278 (532) | 280 (536) | 284 (543) | 280 (536) | 286 (547) | 284 (543) | 306 (583) |
| Pour Point, °C (°F) | ASTM D 97 | -50 (-58) | -50 (-58) | -44 (-47) | -40 (-40) | -40 (-40) | -35 (-31) | -31 (-24) |
| Micropitting @ 90°C Load Stage, | FVA 54 | - | - | >10 | >10 | >10 | >10 | >10 |
| GFT Classification | - | | | GFT=high | GFT=high | GFT=high | GFT=high | GFT=high |
| FZG Failure Stage (A/8.3/90) | - | >12 | >12 | >12 | >12 | >12 | >12 | >12 |
| FZG Failure Stage (A/16.6/90) | - | - | - | >12 | >12 | >12 | >12 | >12 |
| FAG FE-8 Bearing Test (DIN 51589-3) | - | - | - | Pass | Pass | Pass | Pass | Pass |
| Four Ball EP | ASTM D2783 | | | | | | | |
| a) Weld, kg | - | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| b) Load Wear Index, kg | - | 45 | 52 | 54 | 55 | 58 | 54 | 54 |
| Falex B (Failure), lbf | ASTM D3233 | 2750 | 2750 | 3000 | 3000 | 3000 | 3250 | 3250 |
| Timken OK Load, lbs | ASTM D2782 | >90 | >90 | >90 | >90 | >90 | >90 | >90 |
| FOAM Tendency | ASTM D892 | | | | | | | |
| SEQ I (ml) | - | 0/0 | 0/0 | 0/0 | 0/0 | 0/0 | 0/0 | 0/0 |
| SEQ II (ml) | - | 10/0 | 10/0 | 10/0 | 10/0 | 10/0 | 10/0 | 25/0 |
| SEQ III (ml) | - | 0/0 | 0/0 | 0/0 | 0/0 | 0/0 | 0/0 | 0/0 |
| Demulsibility | ASTM D1401 | 40/40/0 | 40/40/0 | 40/40/0 | 40/40/0 | 40/40/0 | 40/40/0 | 40/40/0 |
| | | (25) | (25) | (25) | (25) | (25) | (25) | (25) |
| Copper Corrosion 121°C, 3 hr | ASTM D130 | 1B | 1B | 1B | 1B | 1B | 1B | 1B |
| Rust Prevention | ASTM D665 A & B | Pass | Pass | Pass | Pass | Pass | Pass | Pass |

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