



LUBRICANTS

## Syncon® EP Plus Gear Oil

Phillips 66® Syncon EP Plus Gear Oil is a premium quality, synthetic, extreme-pressure industrial gear lubricant developed for the lubrication of enclosed gear drives and heavily loaded plain or rolling-element bearings operating at extreme temperatures or in severe service. It is suitable for use over a wider temperature range than conventional mineral oil-based gear oils. It meets the performance requirements of major gear drive manufacturers.

Syncon EP Plus Gear Oil is formulated with synthetic polyalphaolefin (PAO) base oils, a viscosity modifier, and a non-chlorinated extreme-pressure additive package. It has outstanding oxidation resistance and thermal stability at high temperatures to help minimize deposit formation and provide long service life. It has high load-carrying capacity for protection against scuffing and wear, protects against rust and corrosion, and is resistant to excessive foaming that can interfere with proper lubrication. It has a high viscosity index and low pour point for use in equipment operating at extreme temperatures or over a very wide temperature range.

### Applications

- Heavily loaded enclosed gear drives, such as those found in mine hoists and mining machinery
- Enclosed industrial gear drives operating at very low or very high temperatures, or operating continuously at higher than normal operating temperatures
- Heavily loaded plain and rolling-element bearings operating at extreme temperatures
- Applications where the equipment manufacturer recommends a high VI, synthetic, extreme-pressure gear oil

Syncon EP Plus Gear Oil meets the requirements of the following industry and OEM specifications:

- ANSI/AGMA Standard 9005-F16, Anti-Scuff Lubricants (AS)
- DIN 51517 Part 3, Lubricating Oils, Type CLP HC
- German Steel Industry SEB 181226, Type CLP HC
- ISO 12925-1:1996, Type L-CKC
- Joy Machinery Specification TO-SHEP (ISO VG 320), TO-SMEP (ISO VG 220)
- U.S. Steel 224

**High VI  
Synthetic PAO-  
Based Extreme-  
Pressure  
Industrial Gear  
Lubricant**

**KEEPING THE  
WORLD  
RUNNING  
SMOOTHLY.**





## Features/Benefits

- Outstanding oxidation resistance and thermal stability at high temperatures
- Outstanding low-temperature properties
- High viscosity index and low pour point for use over wide temperatures
- Excellent extreme-pressure properties
- Protection against scuffing and wear
- Protects against rust, corrosion, and foaming
- Non-chlorinated additive system
- Suitable for year-round use
- Extended service intervals compared to mineral oil-based gear oils

## Syncon® EP Plus Gear Oil

| Typical Properties                                 |           |           |           |           |           |
|--|-----------|-----------|-----------|-----------|-----------|
| ISO Grade  | 150       | 220       | 320       | 460       | 680       |
| AGMA Grade (obsolete)                              | 4 EP      | 5 EP      | 6 EP      | 7 EP      | 8 EP      |
| AGMA Classification                                | AS        | AS        | AS        | AS        | AS        |
| Specific Gravity @ 60°F                            | 0.861     | 0.865     | 0.866     | 0.870     | 0.875     |
| Density, lbs/gal @ 60°F                            | 7.17      | 7.20      | 7.21      | 7.24      | 7.29      |
| Color, ASTM D1500                                  | 1.0       | 1.0       | 1.0       | 1.0       | 1.0       |
| Flash Point (COC), °C (°F)                         | 249 (480) | 249 (480) | 249 (480) | 249 (480) | 249 (480) |
| Pour Point, °C (°F)                                | -49 (-56) | -49 (-56) | -44 (-47) | -47 (-53) | -42 (-44) |
| Viscosity  |           |           |           |           |           |
| cSt @ 40°C   | 150       | 220       | 320       | 460       | 680       |
| cSt @ 100°C  | 20.9      | 27.5      | 35.3      | 47.6      | 64.4      |
| SUS @ 100°F  | 769       | 1,134     | 1,660     | 2,392     | 3,549     |
| SUS @ 210°F  | 105       | 135       | 170       | 230       | 311       |
| Viscosity Index                                    | 163       | 161       | 156       | 162       | 166       |
| Acid Number, ASTM D974, mg KOH/g                   | 0.76      | 0.76      | 0.76      | 0.76      | 0.76      |
| Copper Corrosion, ASTM D130, 48 hrs @ 80°C         | 1a        | 1a        | 1a        | 1a        | 1a        |
| Four-Ball EP, ASTM D2783, Weld Load, kgf           | 315       | 315       | 315       | 315       | 315       |
| Four-Ball Wear Test, ASTM D4172, Scar Diameter, mm | 0.45      | 0.45      | 0.45      | 0.45      | 0.45      |
| FZG Scuffing Test, ASTM D5182, Failure Load Stage  | >12       | >12       | >12       | >12       | >12       |
| Oxidation Stability, ASTM D2893B                   |           |           |           |           |           |
| Viscosity Increase @ 121°C, %                      | <6        | <6        | <8        | <10       | <10       |

## 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>.

