



## Mobil SHC™ Gear Series

Mobil Industrial , Mali

Gear Oils



### Product Description

Mobil SHC™ Gear Series is a line of exceptional performance, synthetic industrial gear oils designed to provide outstanding protection of gears and bearings, extended oil life even under extreme conditions, helping to enable problem-free operation of equipment and increased customer productivity. These scientifically engineered synthetic lubricants are formulated from synthetic base fluids that have exceptional oxidation and thermal properties and excellent low temperature fluidity. The high viscosity index of these oils deliver less change in viscosity with changes in temperature, enabling wider operating temperature range and improved low temperature startup. Mobil SHC Gear Series lubricants contain an advanced proprietary additive system designed to provide excellent protection against conventional wear modes such as scuffing as well as a high level of resistance against micropitting fatigue. In addition, compared to conventional gear oil chemistries, it offers the potential for improved lubrication of gearbox rolling element bearings. Mobil SHC Gear Series products offer outstanding rust and corrosion protection relative to conventional gear oils, even in the presence of seawater contamination. They show no tendency to plug fine filters even when wet and have excellent compatibility with ferrous and non-ferrous metals even at elevated temperatures. Mobil SHC Gear Series also exhibit outstanding compatibility with elastomers in static seal tests. They have outstanding EP properties that provide protection even under shock load conditions. The synthetic base stocks used in Mobil SHC Gear Series oils have inherently low traction properties that result in low fluid friction in the load zone of non-conforming surfaces such as gears and rolling element bearings. Reduced fluid friction produces lower operating temperatures and can help improve gear efficiency.

Mobil SHC Gear lubricants are recommended for enclosed industrial gear drives including steel-on-steel spur, helical, and bevel gears. They are especially recommended for applications that may be subject to micropitting: especially heavily loaded gearboxes with surface-hardened tooth metallurgies. It may also be used in gear applications where extreme low and/or high temperatures are encountered and applications where corrosion may be severe.

### Features and Benefits

Mobil SHC Gear Series lubricants are part of the Mobil SHC line of products that are recognized and appreciated around the world for innovation and outstanding performance. These synthetic products, pioneered by our research scientists, symbolize the continuing commitment to using advanced technology to provide lubricants with excellent balanced performance. A key factor in the development of Mobil SHC Gear Series was the close contacts between our scientists and application specialists with key OEMs to ensure that our product offering would provide exceptional performance with rapidly evolving industrial gear designs and operation. Not least among the benefits shown in work with OEMs is the ability to resist micropitting wear which can occur with some highly loaded, case-hardened gearing applications. This cooperative work also demonstrated the all-round balanced performance benefits for the new Mobil SHC Gear technology, including a wide temperature range of application.

To address the issue of micropitting wear, our product formulation scientists designed a proprietary combination of additives which would resist traditional gear wear mechanisms as well as protecting against micropitting. Mobil SHC Gear products provide exceptional oil life and deposit control and resistance to thermal/oxidative and chemical degradation, as well as the balance of the performance features. The patent-pending combination of synthetic base oils also provides exceptional low temperature fluidity characteristics unmatched by conventional mineral oil gear lubricants and is a key benefit for remote, low ambient temperature applications. The Mobil SHC Gear Series lubricants offer the following potential benefits:

| Features   | Advantages and Potential Benefits   |
|--|---|
| Superb protection from micropitting fatigue wear as well as high resistance to traditional scuffing wear | <p>Helps extend gear and bearing life in enclosed gear drives operating under extreme conditions of load, speed and temperature</p> <p>Helps reduce unplanned downtime; less maintenance - especially critical for difficult to access gearboxes.</p> |

| Features   | Advantages and Potential Benefits  |
|--|--|
| Excellent resistance to degradation at high temperatures                               | Helps extend oil life and drain intervals and reduce oil consumption, which can lower maintenance costs  |
| Low traction   | Helps reduce energy consumption and lower operating temperatures   |
| High viscosity index equating to reduced viscosity change with temperature             | Ability to operate at both high and low temperatures: especially critical in remote applications with no oil cooling or heating  |
| Excellent resistance to rust and corrosion and very good demulsibility                 | Helps to ensure smooth, trouble-free operation at high temperatures or in applications subject to water contamination<br>Excellent compatibility with a variety of soft metals |
| Excellent shear stability  | Helps extend gear and bearing life   |
| Resistance to filter plugging, even in the presence of water                           | Fewer filter changes; which can help reduce maintenance costs  |
| Excellent seal compatibility   | Less contamination and lower potential for oil leakage   |
| Excellent compatibility with common gearbox materials and with mineral-based gear oils | Easy changeover from many mineral products   |

### Applications

Application Considerations: While the Mobil SHC Gear Series are compatible with mineral oil based products, admixture may detract from their performance. Consequently it is recommended that before changing a system to one of the Mobil SHC Gear Series, it should be thoroughly cleaned out and flushed to achieve the maximum performance benefits.

Mobil SHC Gear Series exceptional performance, synthetic industrial gear oils are designed to provide optimum equipment protection and oil life even under extreme conditions. They are especially formulated to resist micropitting of modern, case hardened gearing and can operate in both high and low temperature environments. Typical applications include:

- Modern, highly loaded gearboxes used in the paper, steel, oil, textile, lumber and cement industries where gear protection and optimum oil life are required.
- Plastic extruder gearboxes

Mobil SHC Gear Series ISO VG 150, 220, 320, 460 and 680 are approved under General Electric's (GE) gear oil specification D50E35 for use in off-highway vehicle motorized wheel gearbox applications.

### Specifications and Approvals

| This product has the following approvals: | 150 | 220 | 320 | 460 | 680 | 1000 |
|---|-----|-----|-----|-----|-----|------|
| Flender                                   | X   | X   | X   | X   | X   |      |
| GE OHV D50E35A/B/C/D/E                    | X   | X   | X   | X   | X   |      |
| SEW-Eurodrive                             | X   | X   | X   | X   | X   | X    |
| ZF TE-ML 04H                              | X   |     |     |     |     |      |

| This product meets or exceeds the requirements of: | 150 | 220 | 320 | 460 | 680 | 1000 |
|--|-----|-----|-----|-----|-----|------|
| AGMA 9005-F16                                      | X   | X   | X   | X   | X   |      |

| <b>This product meets or exceeds the requirements of:</b> | <b>150</b> | <b>220</b> | <b>320</b> | <b>460</b> | <b>680</b> | <b>1000</b> |
|---|------------|------------|------------|------------|------------|-------------|
| DIN 51517-3:2018-09                                       | X          | X          | X          | X          | X          | X           |
| ISO L-CKD (ISO 12925-1:2018)                              | X          | X          | X          | X          | X          | X           |
| ISO L-CTPR (ISO 12925-1:2018)                             | X          | X          |            |            |            |             |

### Properties and Specifications

| <b>Property</b>   | <b>150</b> | <b>220</b> | <b>320</b> | <b>460</b> | <b>680</b> | <b>1000</b> |
|---|------------|------------|------------|------------|------------|-------------|
| Grade   | ISO 150    | ISO 220    | ISO 320    | ISO 460    | ISO 680    | ISO 1000    |
| Brookfield Viscosity @ -17.8 C, mPa.s, ASTM D2983                 |            |            |            |            | 41000      | 96000       |
| Brookfield Viscosity @ -29 C, mPa.s, ASTM D2983                   | 18200      | 35000      | 57000      | 107000     | 156000     | 500000      |
| Copper Strip Corrosion, 24 h, 121 C, Rating, ASTM D130            | 1B         | 1B         | 1B         | 1B         | 1B         | 1B          |
| Demulsibility, Total Free Water, for EP Oils, ml, ASTM D2711      | 88         | 87         | 85         | 84         | 87         | 82          |
| Density @ 15.6 C, g/ml, ASTM D4052                                | 0.86       | 0.86       | 0.86       | 0.86       | 0.86       | 0.87        |
| Emulsion, Time to 37 mL Water, 82 C, min, ASTM D1401              | 10         | 10         | 10         | 15         | 25         | 40          |
| FZG Micropitting, Fail Stage, Rating, FVA 54                      | 10         | 10         | 10         | 10         | 10         | 10          |
| FZG Micropitting, GFT-Class, Rating, FVA 54                       | High       | High       | High       | High       | High       | High        |
| FZG Scuffing, Fail Load Stage, A/16.6/90, ISO 14635-1(mod)        |            | >14        | >14        | >14        | >14        | >14         |
| FZG Scuffing, Fail Load Stage, A/8.3/90, ISO 14635-1              | >14        |            |            |            |            |             |
| FZG Scuffing, Fail Load Stage, A/8.3/90, ISO 14635-1(mod)         |            | 14         | 14         | 14         | 14         | 14          |
| Flash Point, Cleveland Open Cup, °C, ASTM D92                     | 233        | 233        | 233        | 234        | 234        | 234         |
| Foam, Sequence II, Stability, ml, ASTM D892                       | 0          | 0          | 0          | 0          | 0          | 0           |
| Foam, Sequence II, Tendency, ml, ASTM D892                        | 0          | 0          | 0          | 0          | 0          | 0           |
| Four-Ball Extreme Pressure Test, Load Wear Index, kgf, ASTM D2783 | 51         | 51         | 51         | 51         | 51         | 51          |
| Four-Ball Extreme Pressure Test, Weld Load, kgf, ASTM D2783       | 200        | 200        | 200        | 200        | 200        | 200         |
| Kinematic Viscosity @ 100 C, mm <sup>2</sup> /s, ASTM D445        | 22.2       | 30.4       | 40.6       | 54.1       | 75.5       | 99.4        |
| Kinematic Viscosity @ 40 C, mm <sup>2</sup> /s, ASTM D445         | 150        | 220        | 320        | 460        | 680        | 1000        |
| Pour Point, °C, ASTM D5950  | -54        | -45        | -48        | -48        | -42        | -33         |
| Rust Characteristics, Procedure B, ASTM D665                      | PASS       | PASS       | PASS       | PASS       | PASS       | PASS        |
| Total Acid Number, mgKOH/g, ASTM D664                             | 0.9        | 0.9        | 0.9        | 0.9        | 0.9        | 0.9         |
| Viscosity Index, ASTM D2270                                       | 176        | 180        | 181        | 184        | 192        | 192         |

## Health and Safety

Health and Safety recommendations for this product can be found on the Material Safety Data Sheet (MSDS) @ <http://www.msds.exxonmobil.com/psims/psims.aspx>

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