Mobil SHC™ Gear Series

Mobil Industrial , Mozambique

Gear Oils

Performance as described below*

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, exten life even under extreme conditions, helping to enable problem-free operation of equipment and increased customer productivity. These scientifically engineered sy lubricants are formulated from synthetic base fluids that have exceptional oxidation and thermal properties and excellent low temperature fluidity. The high viscosity of these oils deliver less change in viscosity with changes in temperature, enabling wider operating temperature range and improved low temperature startup. Mob Gear Series lubricants contain an advanced proprietary additive system designed to provide excellent protection against conventional wear modes such as scuf well as a high level of resistance against micropitting fatigue. In addition, compared to conventional gear oil chemistries, it offers the potential for improved lubrica gearbox rolling element bearings. Mobil SHC Gear Series products offer outstanding rust and corrosion protection relative to conventional gear oils, even in the pre of seawater contamination. They show no tendency to plug fine filters even when wet and have excellent compatibility with ferrous and non-ferrous metals e elevated temperatures. Mobil SHC Gear Series also exhibit outstanding compatibility with elastomers in static seal tests. They have outstanding EP properties that p 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 lo friction in the load zone of non-conforming surfaces such as gears and rolling element bearings. Reduced fluid friction produces lower operating temperatures a 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 recomm for applications that may be subject to micropitting: especially heavily loaded gearboxes with surface-hardened tooth metallurgies. It may also be used i 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 outst performance. These synthetic products, pioneered by our research scientists, symbolize the continuing commitment to using advanced technology to provide lub with excellent balanced performance. A key factor in the development of Mobil SHC Gear Series was the close contacts between our scientists and application spe with key OEMs to ensure that our product offering would provide exceptional performance with rapidly evolving industrial gear designs and operation. Not least a the benefits shown in work with OEMs is the ability to resist micropitting wear which can occur with some highly loaded, case-hardened gearing application cooperative work also demonstrated the all-round balanced performance benefits for the new Mobil SHC Gear technology, including a wide temperature ra application.

To address the issue of micropitting wear, our product formulation scientists designed a proprietary combination of additives which would resist traditional gea mechanisms as well as protecting against micropitting. Mobil SHC Gear products provide exceptional oil life and deposit control and resistance to thermal/oxidati chemical degradation, as well as the balance of the performance features. The patent-pending combination of synthetic base oils also provides exception temperature fluidity characteristics unmatched by conventional mineral oil gear lubricants and is a key benefit for remote, low ambient temperature applicatior 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	Helps extend gear and bearing life in enclosed gear drives operating under ext conditions of load, speed and temperature Helps reduce unplanned downtime; less maintenance - especially critical for diffic access gearboxes.
Excellent resistance to degradation at high temperatures	Helps extend oil life and drain intervals and reduce oil consumption, which can l maintenance costs

Features	Advantages and Potential Benefits
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 re 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 applica subject to water contamination Excellent compatibility with a variety of soft metals
Excellent shear stability	Helps extend gear and bearing life
Resistence 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 perforr 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 achie 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 ex conditions. They are especially formulated to resist micropitting of modern, case hardened gearing and can operate in both high and low temperature environ 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 v 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	
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

Property	150	220	320	460	680	1000
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, mm2/s, ASTM D445	22.2	30.4	40.6	54.1	75.5	99.4
Kinematic Viscosity @ 40 C, mm2/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.as

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Typical Properties are typical of those obtained with normal production tolerance and do not constitute a specification. Variations that do not affect pro

performance are to be expected during normal manufacture and at different blending locations. The information contained herein is subject to change withc notice. All products may not be available locally. For more information, contact your local ExxonMobil contact or visit www.exxonmobil.com

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