Mobil SHC™ Gear 320 WT

Mobil Industrial , Belgium

Advanced Wind Turbine Gear Lubricant

RENEWABLES CERTIFICATION
DNV·GL
Design Evaluation
DE-DNVGL-SE-0074-05128

Product Description

Mobil SHC™ Gear 320 WT advanced wind turbine gear lubricant is a fully synthetic industrial gear lubricant designed to provide optimum equipment protection for wind turbine gearboxes and extended lubricant life even under extreme conditions.

ExxonMobil's next generation polyalphaolefin (PAO) technology has been selected for its exceptional oxidation resistance and thermal properties. This exclusive synthetic base fluid is the foundation for this novel, balanced gear oil formulation, which delivers benefits in micropitting, viscosity index, air release, and low temperature flow characteristics versus other synthetic gear oils.

Mobil SHC Gear 320 WT advanced wind turbine gear lubricant contains step-out, scientifically engineered proprietary additive technology designed to provide balanced performance in all areas. In particular, Mobil SHC Gear 320 WT offers a high level of resistance against micropitting fatigue and outstanding rust and corrosion protection.

Additionally, in support of industry focus on White Etching Cracks (WEC) plaguing some wind turbine operations, Mobil SHC Gear 320 WT was subjected to an extensive scientific study to evaluate performance and relation to WEC. Mobil SHC Gear 320 WT advanced wind turbine gear lubricant is the first lube oil which has been independently certified to not contribute to oil related effects of White Etching Cracks (WEC) by the world leading certification body DNV-GL.

Mobil SHC Gear 320 WT advanced wind turbine gear lubricant has been approved by major Original Equipment Manufacturers (OEM) for use in their equipment and meets the main industry requirements, including the cleanliness level required by IEC 61400-4 (Design requirements for wind turbine gearboxes).

Features and Benefits

Mobil SHC synthetic lubricants are recognized and appreciated around the world for innovation and outstanding performance. Mobil SHC Gear 320 WT advanced wind turbine gear lubricant was developed in close relation with key wind turbine, gearbox, and bearing OEMs to ensure exceptional performance in the rapidly evolving wind turbine gearbox designs.

Our scientists designed a proprietary combination of additives that resist traditional gear wear mechanisms, such as scuffing, as well as protect against micropitting with very low tendency for sludge and deposit formation. The exclusive use of next-generation PAO synthetic base oils and utilization of a novel blending approach delivers balanced performance benefits in micropitting, viscosity index, air release, and low temperature flow characteristics.

Mobil SHC Gear 320 WT advanced wind turbine gear lubricant offers the following features and 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 extreme conditions of load, speed and

Features	Advantages and Potential Benefits
	temperature Helps reduce unplanned downtime and maintenance - especially critical for difficult to access gearboxes
Independently certified to not contribute to oil related effects of White Etching Cracks (WEC)	Helps reduce unplanned downtime and maintenance from premature bearing failure and gearbox replacement
Outstanding foam protection, even after fine filtration	Helps reduce risk of spillage and environmental impact. Reduces/Eliminates turbine trips due to false oil level alarms.
Excellent resistance to degradation at high temperatures	Helps reduces oil consumption and maintenance costs through extended oil life and drain intervals
Formulated with proprietary step-out low sulfur Extreme Pressure technology delivering low deposit performance, sludge formation control, and equipment component compatibility	Offers better protection of equipment and longer drain intervals for optimized maintenance costs
Outstanding cleanliness level, better than -/14/11 (ISO 4407)	Helps provide smooth, trouble-free operations in all operating conditions Helps reduce additional on-site filtration and associated costs
Multiple equipment approvals and excellent compatibility with mineral-based gear oils	Provides performance confidence from a wide range of wind turbine OEM builders Enables consolidated and simplified gear oil inventory management and equipment optimization in mixed turbine operations

Applications

Mobil SHC Gear 320 WT advanced wind turbine gear lubricant is recommended for lubrication of the main gearbox in wind turbine power generation systems. It is especially recommended for applications that may be subject to micropitting, especially heavily loaded gearboxes with surface-hardened tooth metallurgies, which are typically used in wind turbines. It may also be used in gear applications where extreme low and/or high temperatures are encountered and applications where corrosion may be severe. Compared to conventional gear oil chemistries, Mobil SHC Gear 320 WT advanced wind turbine gear lubricant can provide improved lubrication of gearbox rolling element bearings.

Mobil SHC Gear 320 WT has a recommended operating temperature range of -35 °C to 100 °C.

Typical applications include:

- Wind turbines, especially highly loaded and shock loaded units, remotely located units and extreme temperature environments
- Auxiliary gearboxes in wind turbines, such as gearmotors for pitch and yaw drives

Application consideration: while Mobil SHC Gear 320 WT is compatible with mineral oil-based products, it is recommended that systems are thoroughly cleaned out and flushed before switching to Mobil SHC Gear 320 WT to achieve the maximum performance benefits.

Specifications and Approvals

This product has the following approvals:
CN Gpower

This product has the following approvals:
Delijia
DNV-GL
Eickhoff
Envision
GE Renewable Energy
Goldwind
Hitachi
Ishibashi Manufacturing
Mitsubishi Heavy Industries
Mitsui Miike Machinery
Moventas
Nordex
Senvion
Suzlon
Wikov
Winergy
ZF Wind Power
NGC
TYHI(Taiyuan Heavy Industry)
Siemens Gamesa Renewable Energy

This product meets or exceeds the requirements of:
AGMA 9005-F16
DIN 51517-3:2018-09
IEC 61400-4 :2012(E)
ISO L-CKD (ISO 12925-1:2018)
ISO L-CKSMP (ISO 12925-1:2018)
Non-toxicity to aquatic organisms according to the GESAMP hazard evaluation procedure
ISO L-CTPR (ISO 12925-1:2018)

Properties and Specifications

Property	
Grade	ISO 320
Density @ 15.6 C, g/ml, ASTM D4052	0.851
Emulsion, Time to 37 mL Water, 82 C, min, ASTM D1401	15
Flash Point, Cleveland Open Cup, °C, ASTM D92	256
Foam, Sequence II, Tendency, ml, ASTM D892	0
Foam, Sequence II, Stability, ml, ASTM D892	0
FZG Micropitting, Fail Stage, Rating, FVA 54	>10
FZG Micropitting, GFT-Class, Rating, FVA 54	High
FZG Scuffing, A/8.3/90, Fail Stage, Rating, DIN 51354	14+
Kinematic Viscosity @ 100 C, mm2/s, ASTM D445	44.7
Kinematic Viscosity @ 40 C, mm2/s, ASTM D445	343
Pour Point, °C, ASTM D5950	-45
Rust Characteristics, Procedure B, ASTM D665	PASS
Viscosity Index, ASTM D2270	189
ISO 4406 Cleanliness, class, ISO 4407	-/14/11

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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Typical Properties are typical of those obtained with normal production tolerance and do not constitute a specification. Variations that do not affect product performance are to be expected during normal manufacture and at different blending locations. The information contained herein is subject to change without 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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