PANO
P E R F O R M A N C E I N M O T I O N

Product Data Sheet

Product	**Pano Windfluids 320 Fully Synthetic Wind Turbine Gear Oil**
Summary	Product description Pano Windfluids 320 is a premium fully synthetic industrial gear oil specifically engineered for the demanding lubrication requirements of wind turbine gearboxes. Formulated with high-quality poly-alpha-olefin (PAO) base oils and an advanced multifunctional additive system, it provides exceptional protection against micropitting and scuffing. It ensures long oil life and reliable operation under severe conditions such as heavy loads, shock loading, and wide ambient temperature variations. Available in ISO viscosity grade 320.

Available sizes
PAIL - 18L
DRUM - 200L
IBC - 1000L
Also available in bulk

Applications
Pano Windfluids 320 is suitable for use in:
Gearboxes in onshore and offshore wind turbines, which operate under severe conditions of high torque, heavy or shock-loading, wide ambient temperature ranges, corrosive (sea water) environments, frequent stopping and starting, and poor accessibility for relubrication.
Industrial gears found in other heavy-duty applications, such as equipment used in the steel, pulp and paper, mining, power, and cement industries.

Features and benefits
Excellent antiwear and load-carrying performance: Protects against micropitting and scuffing of gear teeth, reducing the risk of premature failure of gear surfaces and providing extended bearing life under extreme operating conditions (FZG >12).

Outstanding low-temperature fluidity: High viscosity index and low pour point provide excellent low- and high-temperature performance, ensuring smooth cold start-up and efficient operation in extreme ambient environments.

Superior oxidation stability: Prevents oil breakdown at high operating temperatures, prolonging oil service life, allowing for extended drain intervals, and reducing overall maintenance costs.
Excellent corrosion protection and water separation: Protects against rust and copper corrosion even in the presence of seawater contamination, extending component life.
High efficiency: Excellent lubricity and a low traction coefficient provide a significant reduction in power consumption in gear drives, leading to lower bulk oil and system temperatures.

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Typical data

Pano Windfluids 320 Fully Synthetic Wind Turbine Gear Oil

ISO viscosity grade	320
Kinematic viscosity, ASTM D 445	
cSt @ 40°C	318
Viscosity index, ASTM D 2270	190
Pour point, °C, ASTM D 97	-45
Flash point (COC), °C, ASTM D 92	245
Copper corrosion, 3 hours @ 100°C, ASTM D 130	1b
Rust prevention, synthetic sea water, ASTM D 665B	pass
Foaming characteristics, sequences 1, 2 and 3, ASTM D 892	0/0 0/0 0/0
Demulsibility (82°C), ASTM D 2711 water-in-oil test, % emulsion layer, ml separated water content, ml	 0.1 0.1 82.5
Four ball EP, SH/T 3142 weld load, N load wear index, ZMZ/N	 2450 566
FZG scuffing test, fail load stage A/8.3/90, DIN 51354	12+

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FZG micropitting test, FVA 54/7	High Rating (GFT Class 10)

These data are given as an indication of typical values and not as exact specifications.

Industry and OEM specifications

Pano Windfluids 320 meets or exceeds the performance requirements of the following industry and OEM specifications:

AIST (US Steel)	224
ANSI/AGMA	9005
DIN	51517-3 (CLP)
ISO	12925-1 L-CKC/CKD
GB	GB/T 33540.3-2017

Accuracy of information

Data provided in this PDS is typical and subject to change as a result of continuing product research and development. The information given was correct at the time of printing. The typical values given are subject to variations in the testing procedures and the manufacturing process may also result in slight variations. Pano guarantees that its lubricants meet any industry and OEM specifications referred to on this data sheet.

Pano cannot be held responsible for any deterioration in the product due to incorrect storage or handling. Information on best practice is available from your local distributor.

Product and environmental safety

This product should not cause any health problems when used in the applications suggested and when the guidance provided in the Material Safety Data Sheet (MSDS) is followed. Please consult the MSDS for more detailed advice on handling; MSDSs are available from your local distributor. Do not use the product in applications other than those suggested.

As with all products, please take care to avoid environmental contamination when disposing of this product. Used oil should be sent for reclamation/recycling or, if not possible, must be disposed of according to relevant government/authority regulations.

The PANO trademark is registered and protected.

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