Prista Industrial: Beyond the Lubricant

Prista® Gear Oils

www.prista-oil.com

Prista® Gear Oils

The Backbone of Industry

Industrial gearboxes are the backbone of many industries, changing speeds, transferring power and changing the direction of rotation within the widest range of equipment; from small process equipment and factory machinery to huge hydroelectric dams, giant steel mills and state-of-the-art wind turbines.

The demands placed on industrial gears have increased over time, with industrial gears and gearboxes needing to deliver more power through smaller componentry, absorbing less energy and operating in cleaner and quieter environments. These mechanical developments have occurred across the breadth of industrial gear applications and their beneficial impact has stretched and exceeded the performance of many traditional lubricating oils.

Potential for Disaster

There are many potential issues faced by an industrial gear, but wear and corrosion are typically high on the list of possible causes of failure.

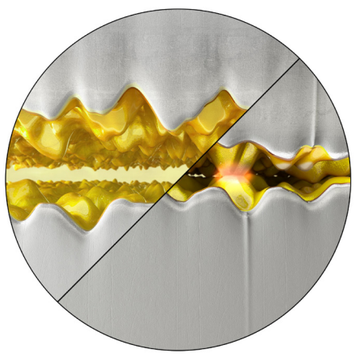
Wear occurs when the layer of lubricant on the teeth of a gear does not withstand the pressure exerted on the gear, resulting in metal-to-metal contact. This can cause a variety of different wear characteristics. Once wear has begun to occur it becomes more difficult for the lubricant to provide further protection, and the wear can often continue to deteriorate until the component fails.

Corrosion is another key issue faced in industrial applications, where gears often operate in humid and moist environments. These are ideal conditions for oxidation and corrosion to occur, and corroded surfaces will accelerate wear and component damage.

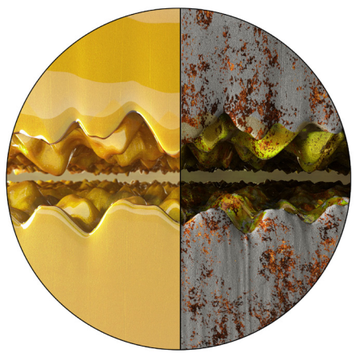
They can also shed debris into the lubricant which circulates around the lubrication system, potentially blocking oil galleries and causing wear and damage to gear teeth, bearings, pump assemblies and other equipment present.

Other key considerations or issues which can be faced with industrial gears and gearboxes are the potential for lubricant foaming which can absorb air into an oil, reducing the lubricant's ability to protect the gears and other components. Water contamination can accelerate rusting and corrosion and may cause a poor quality lubricant to deteriorate and provide even less protection to the components.

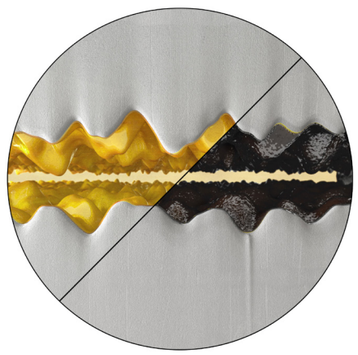
Excessive heat can cause a variety of issues between gears, so a lubricant must be able to dissipate heat and remain within its viscosity profile whilst protecting gears, bearings and other componentry too. Soft/yellow metals need additional protection as they are often the first components to be affected by early wear or corrosion, and it is essential that compatible lubricating oils are chosen to protect these softer materials.



Wear protection with Prista lubricants vs wear result using conventional lubricant



Corrosion and rust protection with Prista lubricant vs corrosion and wear using conventional lubricant

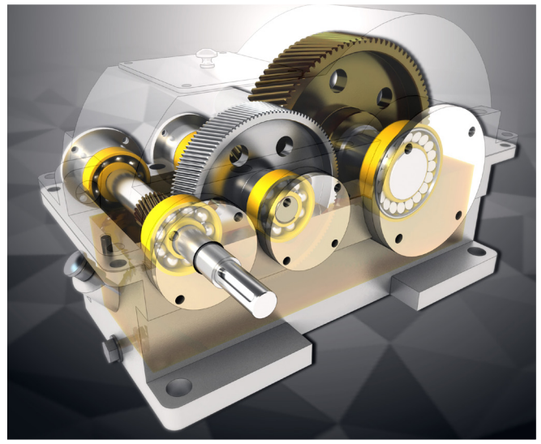


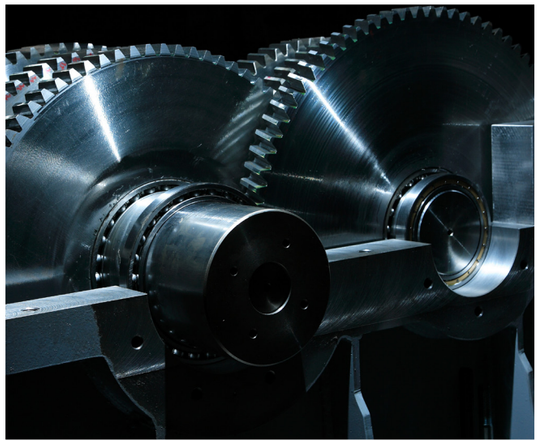
Sludge protection with Prista lubricant vs sludge formation using conventional lubricant

Choosing the Right Gear Oil

Choosing the correct lubricant for each application is vital to secure the reliable and efficient operation of any industrial gears or gearbox. Prista Oils have an advanced expertise and long history of supporting customers with the correct lubricant choices to meet their specific industrial gear requirements.

Prista Oil run laboratory and mechanical testing in order to prove that their lubricant technology meets the most demanding requirements of extreme pressure gear protection in severe environmental conditions. Only when a lubricant has demonstrated and proven its required performance levels will Prista Oil trust and promote their lubricant for sale into the customer's vital equipment and machinery.





Prista® Gear Oils

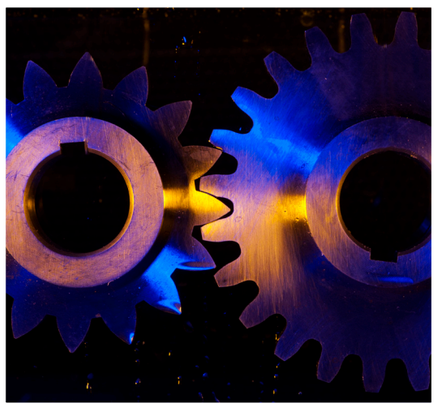
Oxidation Testing

Oxidation is a primary mechanism of lubricant degradation and if oil becomes oxidised it will not lubricate vital parts efficiently. Oxidation occurs when lubricant is exposed to oxygen and the high temperatures generated in industrial gear oils can accelerate the oxidation process. Oxidation testing is key in lubricant testing as it measures the resistance of a lubricant to oxidation. Lubricants are pressurised with oxygen and then subjected to heat, designed to cause oxidation, forcing the lubricant to easily oxidise in a short time. Lubricants with good oxidative stability will typically have a longer working life. Oxidation is responsible for numerous lubricant problems including viscosity increase, varnish and sludge formation, rust formation and corrosion. Prista Rolon delivers on average 45% more oxidation protection compared to the VG220 test limits.

Copper Strip Corrosion

Corrosion is a chemical reaction that occurs on a metal surface. This reaction produces surface irregularities and coolant contamination which may cause abrasive or adhesive wear.

The copper corrosion test is designed to determine the potential levels of corrosion in a lubricant. In this test, a strip of copper is immersed in the fluid and tested at various temperatures, the strip is removed after each test and checked for staining of the copper. The results range from very little to no staining (1a) all the way to very dark stains (4c). This test helps determine the suitability of lubricant for use in equipment.

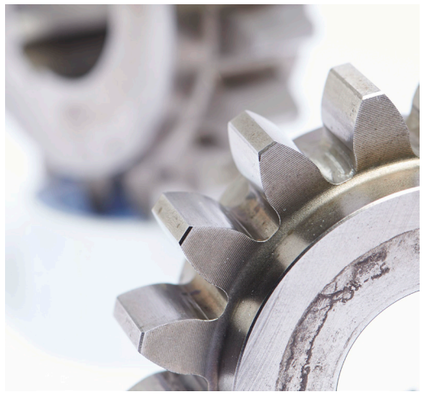


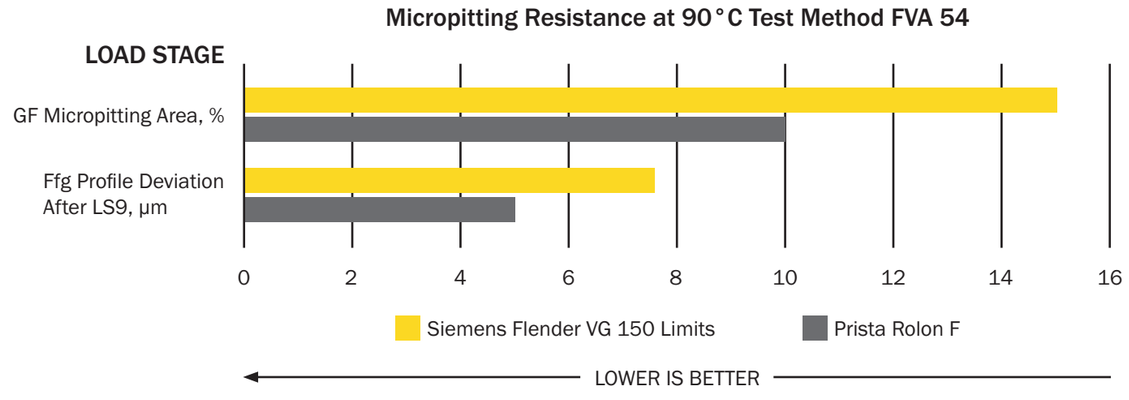
Antiwear Testing

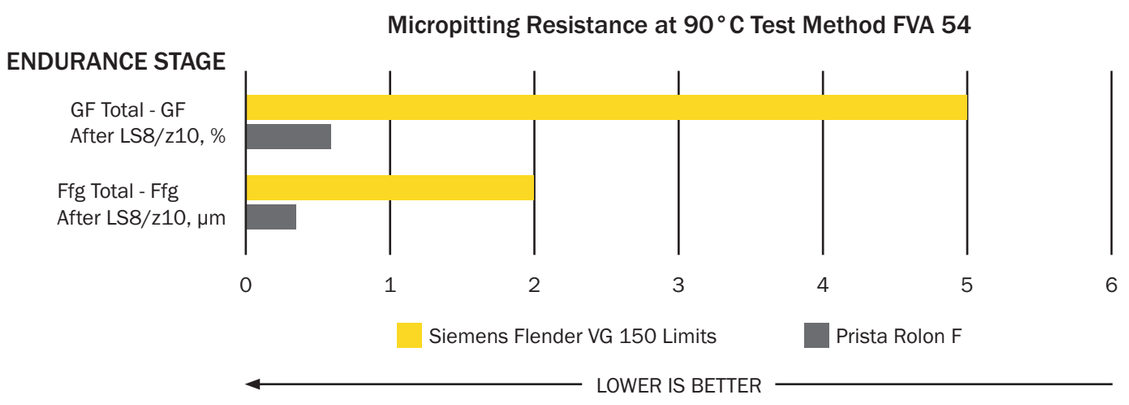
The FZG test evaluates a lubricants wear properties at the interface of a loaded set of gears. During the FZG test, the gears are loaded through a coupling that is set to known load conditions or stages. The gears are rotated by a variable speed electric motor and the fluid temperature is controlled by heating and/or cooling elements. The load stages are 7.5 to 15 minutes long, each subsequent stage increases the load on the gears, which are inspected between every stage. This test evaluates potential wear the fluid has on the gears under severe loading conditions. Wear testing is key in lubricant development to ensure that it fully protects componentry. If wear occurs it will shorten the life expectancy of the lubricant and reduce its capacity for protecting the equipment. Prista Rolon F provides excellent wear protection compared to the VG 150 test limits.

Micropitting is the occurrence of fatigue stress on gear teeth, it begins as tiny pits barely visible to the eye. Over time, micropitting may increase, growing larger and eventually break away. This can lead to noise and vibration, may prevent smooth gear engagement and even be a primary failure mode.

The micropitting test evaluates the influence the lubricants has on the wears and measures the pitted surface area. The FVA 54 micropitting test consists of a load stage test and an endurance test. In the load stage test, the load is increased stepwise from load stage LS 5 to load stage LS 10 with a running time of 16 hour per load stage. It is shown that high performance gear oils using advanced additive technologies can react at the surface of the tooth flanks after an oil change and stop further micropitting formation. In the FVA micropitting test, Prista Rolon F provides 33% more protection compared to the test limits.







Prista® Rolon

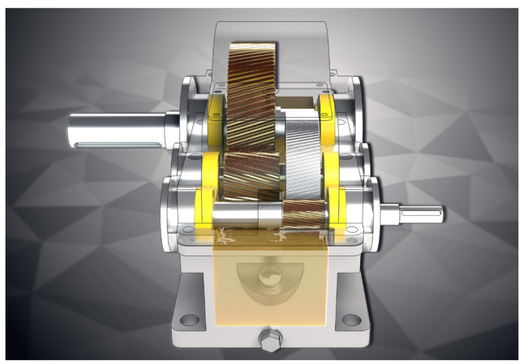
Description and Application

The industrial gear oils in the Prista® Rolon series are developed for the lubrication of heavily loaded industrial gear drives operated at normal, medium and elevated stabilized oil temperatures.

Prista® Rolon oils are designated for the lubrication of heavily loaded closed gear boxes with straight and spiral bevel gears, spur gears, hypoid gears and worm gear drives. Prista® Rolon are formulated with appropriate selection of high-quality solvent-refined and hydro-treated lube base stocks, blended with an ashless sulfur-phosphorus type additive package.

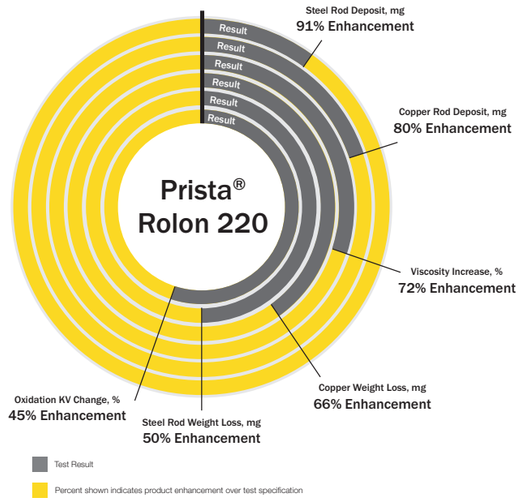
Benefits

- Very good anti-wear and anti-seizure properties
- Superior thermal and oxidation stability
- Dependable corrosion protection
- Seal compatibility
- Good water separability



Specifications

ISO 3448	VG 32, 46, 68, 100, 150, 220, 320, 460 & 680
ISO 6743/6	ISO-L-CKD
ISO	CKC/CKD
US Steel	224
DIN 51517	Part 3, CLP
DAVID BROWN	S1.53.101(E)
AGMA	9005-E02



Prista® Rolon F

Description and Application

Prista® Rolon F oils are formulated with an appropriate selection of high quality solvent-refined and hydro-treated lube base stocks blended with an ashless sulfur-phosphorus type additive package. These oils deliver a high level of micropitting resistance, in addition to high EP protection and thermal stability.

The oils of series Prista® Rolon F are recommended for application in heavy duty and high temperature circulating systems for long-term service. These oils ensure enhanced metal surface protection against micropitting corrosion. which makes them especially suitable for speed reducers ranging from the small motor-reducers of less than 1 kW power to the big powerful units used on metal rolling mills, cement mills and also in hoist mechanisms in mines.

Prista® Rolon F are recommended for lubrication of closed gear drives (reducers), chain (gear) drives, chain wheels and sprockets, plain and rolling bearings, and slide ways and flexible connections/couplings, operated at normal to elevated temperatures. Moreover, Prista® Rolon F oils are also recommended for application in low to medium pressure hydraulic systems, for which the dependable rust and corrosion protection is of crucial importance.

Benefits

- Outstanding micropitting resistance
- Excellent thermal stability and resistance to sludging
- Effective water separation and foam control across a spectrum of temperatures
- Compatible with a wide range of elastomer materials
- Superior bearing protection
- Proven paints compatibility

Specifications

ISO 3448	VG 100, 150, 220, 320, 460
ISO 6743/6	ISO-L-CKD
ISO 12925	CKC/CKD
DIN 51517	Part 3, CLP
Siemens MD	Revision 14 Flender gearboxes
US Steel	224
GM	LS 2 EP Gear oil
AGMA	9005-E02