



GOETZE®

125

SEEKING TO MAXIMISE FUEL ECONOMY?

CARBOGLIDE®

Provides exceptional scuffing and wear resistance compared to conventional piston rings



GOETZE® CARBOGLIDE® REDUCES PISTON RING FRICTION BY UP TO 20%

Goetze CarboGlide® piston rings

- Goetze brings its innovative, OE-proven technology to the aftermarket
- A unique multi-layer microstructure and carbon in diamond-like form
- Optimised for highly rated gasoline engines
- Fitted as Original Equipment by the world's major vehicle manufacturers
- Goetze has a proud history dating back to 1887



CUTTING CARBON, CUTTING EMISSIONS





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GOETZE'S CARBOGLIDE® PISTON RING COATING CUTS FRICTION BY UP TO 20% AND PROVIDES SUPERIOR SCUFFING RESISTANCE

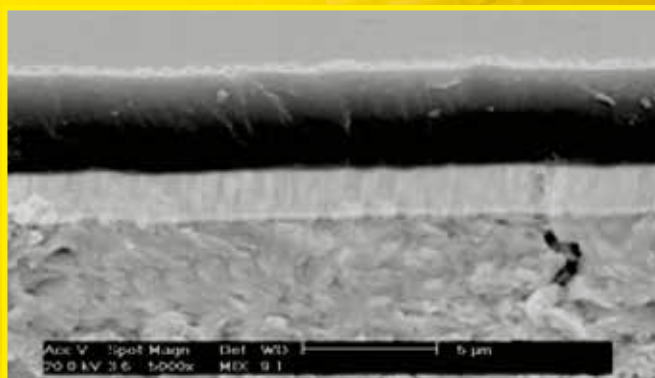
Goetze's new piston ring coating, CarboGlide®, supports vehicle manufacturers' efforts to make gasoline engines more fuel-efficient, cutting piston ring friction by up to 20% compared to conventional rings. Due to its high chemical and physical stability CarboGlide® protects the cylinder bore surface from scuffing and scoring, especially under the most critical lubrication conditions.

Federal-Mogul continues to develop the latest sealing technologies, which must be resistant to high temperatures, high pressures and very high forces while minimising friction wear. They must last longer than ever before despite working with less lubrication.

The high wear resistance makes CarboGlide® suitable for the latest generation of high-output gasoline engines with turbocharging or direct injection, while the low friction improves fuel economy by up to 1.5%.



Goetze CarboGlide® piston rings



Scanning electron micrograph showing the Nano scaled layer structure of the CarboGlide® coating on a top ring on nitride chromium steel

The coating's superior properties are achieved by a multi-layer microstructure and a special coating composition that contains carbon, deposited in diamond-like form, as well as hydrogen and tungsten. The unique structure can be produced in coating thickness up to 10 microns, more than three times that of the industry's latest state-of-the-art DLC (diamond-like carbon) coatings.

A specialized advanced process based on the combination of Physical Vapour Deposition and Plasma-Assisted Chemical Vapour Deposition, specifically developed for piston ring application, is used in applying CarboGlide®. The coating's multi-layer architecture, together with Goetze's surface machining and finishing expertise, ensure the integrity of the coating structure, optimal adhesion of the coating and high coating stability on both steel and cast iron rings.

Extensive testing, on both cast iron and high-silicon aluminum cylinder bores, showed that CarboGlide®-coated rings minimise friction and scuffing over the full life of an engine, even in the challenging environment typical of GDI turbo engines. **CarboGlide® is Goetze's third and most advanced generation of DLC coated ring technology.**



CARBOGLIDE® WAS FINALIST OF THE PRESTIGIOUS 2011 AUTOMOTIVE NEWS PACE™ AWARD

GOETZE CARBOGLIDE® REFERENCE	VEHICLE MAKE	ENGINE DESIGNATION	TYPE
08-437400-00	OPEL	A14 NET	Petrol
08-437300-00	AUDI	4.0Ltr V8 Turbo (560PS)	Petrol