CeramSil-N *Silicon Nitride*

Silicon Nitride is one of the toughest technical ceramics available and over the years has been successfully used in a wide and interesting field of applications as diverse as automotive engine components and roller bearings for the most exclusive skateboards.

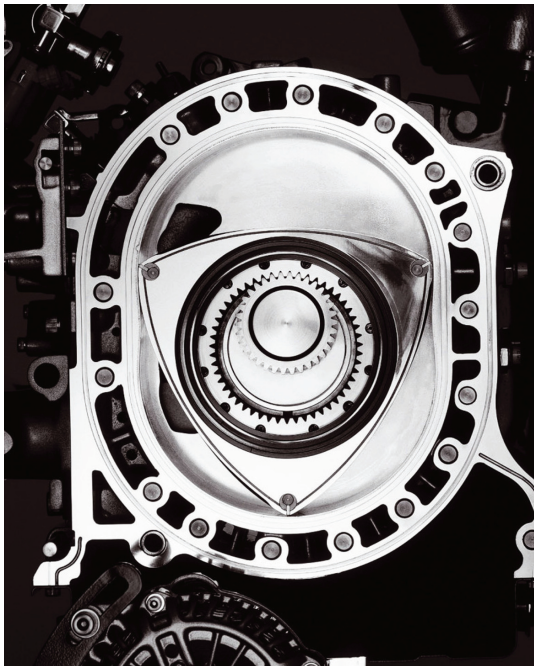
Compared with other technical ceramics, its low thermal expansion coefficient provides good thermal shock resistance. It is extremely hard, surpasses the high temperature capabilities of most metals and also has a superior oxidation resistance. As a consequence, silicon nitride can withstand the toughest conditions in the most demanding high-temperature, high-load applications.

Even NASA Scientists recognised its unique properties when silicon nitride bearings were used in the main engines of the Space Shuttle. It was identified as one of the few monolithic ceramic materials capable of surviving the severe thermal shock and thermal gradients generated in hydrogen/oxygen rocket engines and proved completely reliable throughout the entire Space Shuttle programme.

More recently, silicon nitride 'tip' or 'apex' seals designed and manufactured by Precision Ceramics have provided an added degree of hardness and toughness over conventional steel seals in rotary engine applications, extending the operating life of the engine and substantially reducing maintenance costs and downtime.

Key Properties

- Corrosion resistant to most chemicals – only dilute dilute HF and hot H_2SO_4 affect it.
- Excellent electrical insulation properties
- High fracture toughness
- High strength over wide temperature range
- Lightweight and low density
- Low thermal expansion
- Superior thermal shock resistance
- Wear and abrasion resistant



Ceramic 'tip' or 'apex' seals engineered by Precision Ceramics have found great success in rotary engines

www.precision-ceramics.co.uk
Advanced Technical Ceramic Solutions

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Applications

- Engine moving parts – tip seals, valves, turbocharger rotors and, rocker arm pads
- Heating element components
- Induction heating coil supports
- Metal tube forming rolls and dies
- Precision shafts and axles in high wear environments
- Rotating ball and rollers bearings
- Thermocouple sheaths and tubes
- Turbine blades, vanes and buckets
- Welding nozzles and positioners
- Wind farm turbine blade bearings

Highly wear-resistant silicon nitride ball bearings supplied by Precision Ceramics contribute greatly to the operating efficiency of wind farms and help to keep the turbine blades turning in the severest of weather conditions

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