



CeramAlloy ZTA

High Performance Zirconia-Alumina Toughened (ZTA) Ceramic Composite

Zirconia-Alumina (ZTA) and Alumina-Zirconia (ATZ) high performance ceramic composites are unique ceramic materials by way of exhibiting a combination of high hardness, strength, wear and corrosion resistance characteristic to their Alumina component while still maintaining reasonably high fracture toughness specific to its Zirconia component.

Precision Ceramics offers a range of Zirconia-Alumina ceramic composite materials in different proportions between its main constituents covering a wide range of mechanical properties and intended uses.

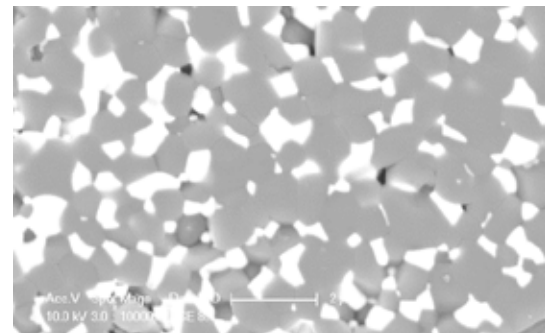
- Metal extrusion dies
- Deep well down-hole valves and seats
- Shaft bearings/bushings

Key properties

- Use temperatures up to 1500°C
- Chemical inertness
- Wear resistance
- High bending strength
- High fracture toughness
- High hardness
- High performance Zirconia-Alumina ceramic composite
- Sintered to near theoretical density or HIPped for enhanced reliability
- Excellent balance between bending strength, hardness and fracture toughness.
- Increased tolerance to hydrothermal ageing

Applications

- High pressure equipment - ball valve balls and seats
- Rollers and guides for metal forming
- Thread and wire guides



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Density [g/cm³] = 4.1
 Flexural Strength [MPa] = 600
 Compressive Strength [MPa] = 2500
 Young's Modulus [GPa] = 335
 Poisson Ratio = 0.23
 Hardness HV_{0.5} [GPa] = 16
 Fracture toughness K_{IC} [MPa/m²] = 7
 Max use temperature [°C] = 1500
 Thermal expansion coefficient [x10⁻⁶/°C] = 7
 Thermal conductivity [w/mK] = 20
 Thermal shock resistance [ΔT °C] = 200

*K_{IC} toughness as measured by the Indentation method

N.B. Values presented are mean values for the samples tested and are given as an indication only for the purpose of comparing between different materials. The properties of the actual material might vary slightly and could be affected by the shape and size of the part.

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 High Performance Customised Ceramics



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