



ZIRCONIA

Zirconia is noted for its strength, toughness, wear and thermal properties.

During manufacture, the zirconia powder is combined with oxides such as yttria or magnesia and the material is said to be "partially stabilised". Varying the composition allows different properties to be enhanced, for example, though not shown in typical properties below, some zirconias can operate at 2000°C.

Advantages: High strength
High toughness
Excellent wear resistance
High hardness
Low thermal conductivity
Good chemical and corrosion resistance

Applications: Wear parts
Valve and pump components
High temperature tubes
Thermal insulation components
Cutting blades
Grinding media



ZIRCONIA (Continued)

PROPERTIES OF ZIRCONIA

	PROPERTY	UNITS			
GENERAL	Chemical formula	n/a	ZrO ₂ +MgO	ZrO ₂ +Y ₂ O ₃	Alumina toughened zirconia
	Density	g/cm ³	5.7	6.0	5.5
	Water Absorption	%	0	0	0
MECHANICAL	Compressive Strength	MPa	1700	2000	2000
	Flexural Strength	MPa	600	950	Up to 2000
	Young's Modulus	GPa	250	205	220
THERMAL	Max. use temperature	°C	1000	1000	1000
	Thermal Conductivity	W/m ^{°K}	2.5	2.0	6
	Coefficient of Linear Thermal Expansion	10 ⁻⁶ /°C	10	10	9
ELECTRICAL	Volume Resistance	Ωcm	>10 ¹⁰	>10 ⁹	-
	Dielectric Constant		28	28	-
	Dielectric Strength	kV/mm	9	9	-

Properties shown are typical values, they are not absolute material properties, and should be used for guidance only. It is recommended that materials and components are tested for their suitability for a specific application.

For more information and advice please discuss your application with our sales staff.