

Precise Alumina Ceramics



Crytur produces complex 3D alumina ceramic shapes. Products are fabricated with a high degree of accuracy for use in instrument manufacture. These ceramics are especially suitable for high vacuum or for metal coatings.

High-performance ceramics are invariably used in situations where other materials, such as plastic or metal, cannot withstand the extremely high loads.

Precision alumina ceramics are typically produced in quantities of 1-100 pieces.

Delivery times range from 4 – 8 weeks, depending on quantity or shape complexity.

Overview of Applications

HIGH VACUUM INSULATING GROMMETS

ELECTRON MICROSCOPY

LASER TECHNOLOGY

SEMICONDUCTOR COMPONENTS

AEROSPACE COMPONENTS

AUTOMOTIVE SENSORS

ELECTRICAL OR ELECTRONIC INSULATORS

BEARINGS TO ANALYTICAL INSTRUMENTATION



Dimension possibilities of complex 3D shape

Maximum OD	100 mm
Minimal ID	1.2 x 2 mm
Standard tolerances	+/- 0,25%
Maximum tolerances	+/- 0,010 mm

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Precise Alumina Ceramics

Our ceramics fabrication includes surface grinding, ID and OD grinding and CNC grinding and polishing. There are many applications for high performance ceramics thanks to the specific characteristics or qualities that each ceramic material possesses.

Overview of Physical Properties

- High** Mechanical Strength
- Excellent** Wear Resistance
- High** Stiffness
- Excellent** Corrosion Resistance
- Low** Coefficient of Thermal Expansion
- Low** Dielectric Constant
- Perfect** Electrical Insulation
- Good** Thermal Conductivity
- High** Thermal Shock Resistance



Roughness as sintered $R_a = 1.6 \mu\text{m}$
 Roughness as machined $R_a = 0.8 \mu\text{m}$
 Median Grain Size Diameter 180-230 μm

BASIC PROPERTIES	
Composition	98% Al_2O_3
Porosity	Fully gas tight
Density	3850 kg/m^3
Color	White

FRACTURE TOUGHNESS TESTS OF CERAMICS	
Fracture Toughness	4.3 $\text{MPa}\cdot\text{m}^{1/2}$
Flexural Strength	386 MPa
Modulus of Elasticity	331 GPa
Compressive Strength	2070 MPa

THERMAL PROPERTIES OF CERAMICS	
Thermal Conductivity	29 $\text{W}/(\text{m}\cdot\text{K})$
Coefficient of Thermal Expansion (300-900K)	$8 \cdot 10^{-6} / \text{K}$
Specific Heat Capacity	880 $\text{J}/(\text{kg}\cdot\text{K})$
Maximum Service Temperature	1650 $^\circ\text{C}$

ELECTRICAL PROPERTIES OF CERAMICS	
Dielectric Strength	9.3 kV/mm
Dielectric Constant (1MHz)	9.4
Specific Resistance (20 $^\circ\text{C}$)	$10^{16} \Omega\cdot\text{m}^{-1}$

HARDNESS TESTS OF CERAMICS	
Vickers Pyramid Number	1340 HV