



Representative straight alumina ceramic tube.

Alumina Ceramic Tubes

Product ID / SKU: FWM/ALU-TUBE-001

Material: Alumina

Product type: Alumina Ceramics Component

Alumina ceramic tubes form heat-resistant process passages, protective sheaths and electrical insulating supports in furnaces, instruments and industrial equipment.

Alumina Typical Material Properties

Property	95% Al ₂ O ₃	99% Al ₂ O ₃	99.5% Al ₂ O ₃	99.8% Al ₂ O ₃	Condition / basis
Density (g/cm ³)	3.65	3.85	3.90	3.92	-
Fracture toughness (MPa·m ^{1/2})	3-4	3-4	4	4	-
Young's modulus (GPa)	320	340	370	390	-
Flexural strength (MPa)	300	330	375	390	25°C
Compressive strength (MPa)	2200	2350	2450	2500	25°C
Thermal conductivity (W/(m·K))	18-22	27	29	32	25°C
Linear thermal expansion coefficient (10 ⁻⁶ /K)	8	8	8	8	25-1000°C
Dielectric strength (kV/mm)	16	20	22	22	-
Volume resistivity (Ω·cm)	10 ¹⁴	10 ¹⁴	10 ¹⁴	10 ¹⁴	25°C
Relative permittivity	9	9.7	9.7	9.8	1MHz, 25°C
Dielectric loss	0.0004	0.0002	0.0002	0.0001	1MHz, 25°C
Vickers hardness (HV)	>1300	1700	1750	1800	-
Material thermal-shock temperature difference, ΔT (°C)	220	180-200	180-200	180-200	-

Property	95% Al ₂ O ₃	99% Al ₂ O ₃	99.5% Al ₂ O ₃	99.8% Al ₂ O ₃	Condition / basis
Typical maximum material temperature (°C)	1500	1650	1700	1700	-

Product Geometry & Configuration

Product parameter	Configuration	Function
Tube form	Open-ended, closed-end or multi-bore	Process passage, component protection or conductor separation
Main dimensions	Outside diameter, bore diameter and length	Defines the installation envelope and wall section
End interfaces	Plain ends, shoulders, flanges or other drawing-defined features	Matches supports, seals and equipment connections
Functional surfaces	Bore, outside diameter and end faces	Finish and tolerances follow fit, flow or insulation duty