

99.5% Alumina Ceramic

Material datasheet · Al₂O₃ 99.5%

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Yorke Precision Industrial Ceramics

High-purity alumina for insulating, wear-resistant and corrosion-resistant precision components. Values below are typical and should be confirmed for the specific grade, process and project.

Chemical & physical properties

Property	Typical value
Al ₂ O ₃ content	≥ 99.5%
Density	≥ 3.90 g/cm ³
Porosity	≤ 0.5%
Colour	White / off-white

Mechanical properties

Property	Typical value
Vickers hardness	≥ 17 GPa (≥ 1700 HV)
Flexural strength	≥ 350 MPa
Fracture toughness	3.0–4.0 MPa·m ^{1/2}
Elastic modulus	≥ 350 GPa

Thermal & electrical properties

Property	Typical value
Thermal conductivity	≥ 30 W/(m·K)
CTE (20–1000°C)	7.0–8.0 ×10 ⁻⁶ /°C
Max service temperature	1700°C
Dielectric strength	≥ 15 kV/mm
Volume resistivity (20°C)	>10 ¹⁴ Ω·cm

Machining & inspection

Capability	Typical range
Dimensional tolerance	±0.01 mm (project dependent)
Flatness	≤0.005 mm
Surface roughness	Ra ≤0.2 µm
Inspection	CMM, roughness, visual; records per project

Typical values only. Final material grade, tolerances and inspection criteria are confirmed by drawing, material certificate and contract. This datasheet is not a warranty of performance.