



Alumina vessel forms for laboratory and thermal-processing selection. Illustrative product view.

Alumina Crucibles

Product reference: alumina-crucibles

Material: Alumina

Product type: Ceramic Crucible

Alumina crucibles are ceramic vessels for laboratory sample preparation, calcination and high-temperature material processing, offering heat stability, chemical resistance and a choice of purity levels.

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
Vessel form	Cylindrical, conical, high-form or shallow vessel	Balances working volume, heating exposure and access to the charge
Working capacity	Usable internal volume in mL or L	Defined below the brim to allow headroom for the process
Main dimensions	Top/base diameter, height and internal depth	Defines furnace fit and the usable cavity
Wall and base	Drawing-defined thickness and bottom profile	Influences temperature gradients and mechanical support
Lid and rim	Open vessel, fitted lid or pouring feature	Selected for exposure, handling and transfer requirements