

CS CERAMIC CO.,LTD

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Tel: (86)-0731-23455639
ADD:Chashan Town Liling City Hunan Province ,China

Alumina Material Properties --CS CERAMIC CO.,TLD

(DATA for 94% 96% 99.5% alumina)

94% Aluminum Oxide			
Mechanical	Units of Measure	SI/Metric	(Imperial)
Density	gm/cc (lb/ft ³)	3.69	(230.4)
Porosity	% (%)	0	(0)
Color	—	white	—
Flexural Strength	MPa (lb/in ² x10 ³)	330	(47)
Elastic Modulus	GPa (lb/in ² x10 ⁶)	300	(43.5)
Shear Modulus	GPa (lb/in ² x10 ⁶)	124	(18)
Bulk Modulus	GPa (lb/in ² x10 ⁶)	165	(24)
Poisson's Ratio	—	0.21	(0.21)
Compressive Strength	MPa (lb/in ² x10 ³)	2100	(304.5)
Hardness	Kg/mm ²	1175	—
Fracture Toughness K _{IC}	MPa•m ^{1/2}	3.5	—
Maximum Use Temperature (no load)	°C (°F)	1700	(3090)
Thermal			
Thermal Conductivity	W/m•°K (BTU•in/ft ² •hr•°F)	18	(125)
Coefficient of Thermal Expansion	10 ⁻⁶ /°C (10 ⁻⁶ /°F)	8.1	(4.5)
Specific Heat	J/Kg•°K (Btu/lb•°F)	880	(0.21)
Electrical			
Dielectric Strength	ac-kv/mm (volts/mil)	16.7	(418)
Dielectric Constant	@ 1 MHz	9.1	(9.1)
Dissipation Factor	@ 1 kHz	0.0007	(0.0007)
Loss Tangent	@ 1 kHz	—	—
Volume Resistivity	ohm•cm	>10 ¹⁴	—

96% Aluminum Oxide			
Mechanical	Units of Measure	SI/Metric	(Imperial)

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Density	gm/cc (lb/ft ³)	3.72	(232.2)
Porosity	% (%)	0	(0)
Color	—	white	—
Flexural Strength	MPa (lb/in ² x10 ³)	345	(50)
Elastic Modulus	GPa (lb/in ² x10 ⁶)	300	(43.5)
Shear Modulus	GPa (lb/in ² x10 ⁶)	124	(18)
Bulk Modulus	GPa (lb/in ² x10 ⁶)	172	(25)
Poisson's Ratio	—	0.21	(0.21)
Compressive Strength	MPa (lb/in ² x10 ³)	2100	(304.5)
Hardness	Kg/mm ²	1100	—
Fracture Toughness K _{IC}	MPa•m ^{1/2}	3.5	—
Maximum Use Temperature (no load)	°C (°F)	1700	(3090)
Thermal			
Thermal Conductivity	W/m•°K (BTU•in/ft ² •hr•°F)	25	(174)
Coefficient of Thermal Expansion	10 ⁻⁶ /°C (10 ⁻⁶ /°F)	8.2	(4.6)
Specific Heat	J/Kg•°K (Btu/lb•°F)	880	(0.21)
Electrical			
Dielectric Strength	ac-kv/mm (volts/mil)	14.6	(365)
Dielectric Constant	@ 1 MHz	9.0	(9.0)
Dissipation Factor	@ 1 kHz	0.0011	(0.0011)
Loss Tangent	@ 1 kHz	—	—
Volume Resistivity	ohm•cm	>10 ¹⁴	—

99.5% Aluminum Oxide			
Mechanical	Units of Measure	SI/Metric	(Imperial)
Density	gm/cc (lb/ft ³)	3.89	(242.8)
Porosity	% (%)	0	(0)
Color	—	ivory	—
Flexural Strength	MPa (lb/in ² x10 ³)	379	(55)
Elastic Modulus	GPa (lb/in ² x10 ⁶)	375	(54.4)

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Shear Modulus	GPa (lb/in ² x10 ⁶)	152	(22)
Bulk Modulus	GPa (lb/in ² x10 ⁶)	228	(33)
Poisson's Ratio	—	0.22	(0.22)
Compressive Strength	MPa (lb/in ² x10 ³)	2600	(377)
Hardness	Kg/mm ²	1440	—
Fracture Toughness K _{IC}	MPa•m ^{1/2}	4	—
Maximum Use Temperature (no load)	°C (°F)	1750	(3180)
Thermal			
Thermal Conductivity	W/m°K (BTU•in/ft ² •hr•°F)	35	(243)
Coefficient of Thermal Expansion	10 ⁻⁶ /°C (10 ⁻⁶ /°F)	8.4	(4.7)
Specific Heat	J/Kg•°K (Btu/lb•°F)	880	(0.21)
Electrical			
Dielectric Strength	ac-kv/mm (volts/mil)	16.9	(420)
Dielectric Constant	@ 1 MHz	9.8	(9.8)
Dissipation Factor	@ 1 kHz	0.0002	(0.0002)
Loss Tangent	@ 1 kHz	—	—
Volume Resistivity	ohm•cm	>10 ¹⁴	—

This chart is intended to illustrate typical properties of advanced ceramic materials available from **CS CERAMIC CO.,LTD**. All data measurements are typical and made at room temperature unless otherwise noted.