

Material properties of Traditional Ceramics

Property	Unit	Quartz porcelain	Al ₂ O ₃ porcelain	Al ₂ O ₃ 85%	Steatite	Cordierite	Chamotte	Machinable glass ceramics
Density	kg/dm ³	2.4	2.8	3.5	2.7	2.1	2.0	2.5
Open porosity	%	0	0	0	0	9	8	0
Bending strength	MPa	90	180	340	170	30	35	90
Elastic modulus	GPa	80	120	280	100	50	50	70
Hardness	Mohs scale	7-8	8-9	8-9	7-8	6-7	6-7	5-6
Thermal expansion	K ⁻¹ ·10 ⁻⁶	5.9	6.0	7.3	7.7	2.4	4.4	11
Heat conductivity	W/(m·K)	1.6	2.5	18	2.3	1.5	1.5	1.5
Thermal shock, ΔT	K	180	180	220	135	>700	>700	100
Max use temp.	°C	1000	1400	1400	1300	1250	1500	800 (1000)
Electrical strength	kV/mm	40	40	35	35	-	-	40
Dielectric loss	at 1MHz	7·10 ⁻³	10·10 ⁻³	9·10 ⁻⁴	2·10 ⁻³	-	-	7·10 ⁻³
Volume resistivity	Ω·cm	10 ¹²	10 ¹⁴	10 ¹⁴	10 ¹⁰	10 ⁹	-	10 ¹⁶