



Material properties of Technical Ceramics / Engineering Ceramics

Property	Unit	Al ₂ O ₃	AlN	Al ₂ TiO ₅	ZrO ₂	Si ₃ N ₄	SiC	WC/Co	Stainless steel
Density	kg/dm ³	3.9	3.4	3.7	5.9	3.2	3.2	15.0	7.9
Hardness, Vickers	(GPa)	17.2	10.6	3.7	11.4	14.0	22.0	13.7	2.0
Bending strength	MPa	390	310	30	1000	900	500	2500	200 _{yield} 500 _{ult}
Compressive strength	MPa	2400	1900	200	3000	3600	2200	6000	200 _{yield} 500 _{ult}
Elastic modulus	GPa	380	320	20	210	300	430	600	200
Fracture toughness	MPa·m ^{1/2}	5.0	3.7	1.0	9.0	6.5	4.0	12	50
Thermal expansion	K ⁻¹ ·10 ⁻⁶	8.0	4.6	1.0	11.0	3.0	4.2	5.0	17.0
Heat conductivity	W/(m·K)	32	150	1.4	3.0	20	110	95	16
Thermal shock, ΔT	K	200	190	1200	300	700	400	650	-
Max use temperature	°C	1600	700	900	900	1200	1500	500	800
Volume resistivity	Ω·cm	10 ¹³	10 ¹⁴	-	10 ¹³	10 ¹⁴	10 ⁴	2·10 ⁻⁶	10 ⁻⁴