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Materials Data Sheet

Property	Unit	Alumine 94 %	Alumina 97,6 %	Alumina 99,5 %	Aluminium Nitride	Zirconia Mgo-PSZ	Zirconia Y-TZP	Silicon Carbide (sintered)	Silicon Nitride (sintered)	Glass Ceramic Macor®
Density	g/cm ³	3,67	3,76	3,86	3,32	5,65	6,05	> 3,10	> 3,24	2,52
Porosity	% water absorption	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Flexural Strength	MPa	345	296	310	300	545	1000	400	750	94
Compressive Strength	MPa	> 2070	> 1720	> 2070	2000	1700	2000	2200	> 2500	345
Young's Modulus	GPa	> 325	> 320	> 370	310	205	205	410	310	67
Fracture Toughness	Kic	-	-	-	-	6,0	10,0	3,2	7,0	-
Hardness		HR 45N 78	HR 45N 75	HR 45N 81	-	HV 0,3 1120	HV 0,3 1300	HV 0,5 2600	HV 0,5 1450	-
Thermal Conductivity	W/m K	20,5	26,8	29,3	170 - 190	2,5	2,4	110	22	1,5
Coef. Linear Thermal Expansion	10 ⁻⁶ / °C	25-1000 °C 9,1	25-1000 °C 9,0	25-1000 °C 9,4	25-1000 °C 5,6	10,0	10,0	20-500 °C 4,0	20-500 °C 2,5	25-800 °C 12,6
Max. Working Temperature (no load)	°C	1600	1650	1725	-	1000	1000	1450 (air)	-	800
Dielectric Strength	kv/mm	25,6	43,3	31,5	20	-	-	-	-	40
Volume Resistivity	Ω cm	>10 ¹⁴	>10 ¹⁴	>10 ¹⁴	5 x 10 ¹²	10 ¹⁰	10 ⁹	>10 ³	10 ¹²	>10 ¹⁶
Dielectric Constant (K')		10 MHz 9,07	10 MHz 9,53	10 MHz 9,58	1 MHz 8,6	-	-	-	-	1 KHz 6,03
Dissipation Factor (tan δ)		10 MHz 0,00026	10 MHz 0,00004	10 MHz 0,00003	1 MHz 0,5 x 10 ⁻³	-	-	-	-	1 KHz 4,7 x 10 ⁻³
Loss Factor (K' tan δ)		10 MHz 0,00236	10 MHz 0,00380	10 MHz 0,00029	-	-	-	-	-	-

Please note that all values quoted are for information only and are based upon test pieces. These values may vary according to component design. They should be used for guidance only. Microcertec do not guarantee that the materials offered will entirely meet these specifications. Further materials are available and data can be supplied upon request.