FC Fine Ceramics characteristics table

Material				Alumina Al_2O_3						Silicon nitride Si_3N_4	Silicon carbide SiC	Aluminum nitride AlN		Zirconia ZrO_2	Low themalexpansion ceramics
Material code				AS999	AT999	AM997	AM997QII	ACM995	ACM96	SN606	SC902E	ALN99	ALN94	Z403	LE101
General Properties	Main component purity		wt%	99.99	99.9	99.7	99.7	99.5	96	90	97	99	94	94	-
	Color			White	Whitish yellow	Whitish yellow	Whitish yellow	Whitish yellow	White	Gray	Black	Light gray	Light gray	Whitish yellow	Gray
	Density		g/cm^3	3.95	3.92	3.93	3.93	3.93	3.74	3.16	3.15	3.24	3.31	5.98	2.55
	Water Absorption		%	0	0	0	0	0	0	0	0	0	0	0	0
Mechanical Properties	Bending strength		MPa	390	400	390	390	370	350	750	490	295	345	880	200
	Young's modulus		GPa	380	385	375	385	370	320	285	400	320	320	245	140
	Vickers Hardness		GPa	18	16	18	17	16	14	16	22	11	11	16	-
Thermal Properties	Max.Operating Temperature		°C	1600	1600	1600	1600	1600	-	1200	1600	1000	1000	-	-
	Coefficient of Thermal Expansion	RT～500°C	$1/K (\times 10^{-6})$	7.0	7.9	7.0	7.0	7.2	7.2	2.7	3.8	4.4	4.4	8.9	<0.5
		RT～800°C		7.7	-	7.6	-	-	-	4.2	-	-	-	10.4	2.0
	Coefficient of Thermal Conductivity		W/m·K	33	34	33	33	32	24	23	170	80	150	3	-
	Thermal Shock Resistance		ΔT (K)	200	200	200	200	250	200	700	300	-	400	280	-
Electrical Properties	Volume Resistivity	25°C	Ω·cm	10^{15}	10^{15}	10^{16}	10^{15}	10^{14}	10^{15}	10^{16}	10^{4}	10^{14}	10^{14}	10^{12}	10^{14}
		300°C		10^{12}	10^{14}	10^{13}	10^{14}	10^{14}	10^{9}	10^{13}	10^{2}	10^{8}	10^{10}	10^{7}	10^{12}
		500°C		10^{9}	10^{11}	10^{10}	10^{12}	10^{10}	10^{7}	10^{11}	10	10^{7}	10^{7}	10^{4}	10^{10}
		800°C		10^{7}	10^{6}	10^{9}	10^{5}	10^{6}	10^{5}	10^{7}	10	10^{5}	10^{5}	10^{2}	10^{6}
	Dielectric Constant	10GHz		9.9	9.8	9.7	9.7	9.9	9.4	8	-	8.5	8.5	33	4.9
	Dielectric Loss (tan δ)		10^{-4}	0.5	4	1	0.15	10	38	6.1	-	30	30	9	5
	Q Factor (1/tan δ)		10^{4}	2	0.25	1	6.7	0.1	0.03	0.16	-	0.03	0.03	0.1	0.2
	Dielectric Breakdown Voltage		kV/mm	18	17	18	18	15	14	14	-	-	15	13	23
Main Characteristics				Chemical-resistant, Microwave-transmissive	Heat-resistant, Chemical-resistant	Heat resistant, Chemical-resistant, Microwave-transmissive	Low dielectric Loss	-	-	High strength, Wear-resistant, Thermal-shock-resistant	High thermal conductivity, Heat resistant, High strength	High thermal conductivity, Microwave-transmissive		High strength, High toughness, Wear-resistant	Low thermal expansion, Poreless
Application				Microwave induction plates, Chamber Parts, Insulating parts	Chamber Parts, Insulating parts	Chamber Parts, Insulating parts, Machine parts, Microwave induction plates	Microwave and RF Semiconductor Equipment	Insulating parts, Machine parts	Insulating parts, Machine parts	Machine parts, Sliding parts, Heat-resistant parts	High thermal conductivity parts, Heat resistant parts, Machine parts	Microwave induction plates, Insulating parts		Machine parts, Sliding parts	Machine parts

*Individual measured values are not guaranteed values. Please use them for reference purposes only.