

CHARACTERISTIC of Kyocera Fine Ceramics (2)

Item		Material	YTTRIA (Y ₂ O ₃)	TITANIA			SILICON CARBIDE (SiC)					
Kyocera No.			Y0100A	T-716	T-716H	T-792H	SC-211	SC1000	SN-201B			
Appearance			Dense	Dense			Dense					
Color			White	Light Brown	Light Brown	Grayish Yellow	Black	Black	Black			
Alumina Content		(%)	—	—	—	—	—	—	—			
Main Characteristics			● Good Plasma Resistance	Good Surface Finish			● High Temperature Strength ● High Chemical Resistance, Excellent Thermal ● Conductivity					
				● CaTiO ₃		● BaTiO ₃						
Main Applications			● SPE Parts	● Slider Pads for Disk Drive Heads			● Mechanical Seal, ● High Temperature Resistance Parts					
Bulk Density		g/cm ³	JIS R1634	4.9	3.9	4.0	4.5	3.2	3.16	3.2		
Water Absorption		%	JIS R1634	0	0	0	0	0	0	0		
Mechanical Characteristics	Vickers Hardness HV1		GPa	JIS R1610	6.0	8.5	8.8	8.1	22.0	23.0	13.9	
	Flexural Strength		MPa	JIS R1601	130	320	320	230	540	450	580	
	Compressive Strength		MPa	JIS R1608	—	—	—	—	—	—	—	
	Young's Modulus of Elasticity		GPa	JIS R1602	160	260	270	180	430	440	290	
	Poisson's Ratio		—		—	—	—	—	0.16	0.17	0.28	
	Fracture Toughness		MPam ^{1/2}	JIS R1607	1.1	—	—	—	4 ~ 5	2 ~ 3	4 ~ 5	
Thermal Characteristics	Coefficient of Linear Thermal Expansion	40 ~ 400°C	× 10 ⁻⁶ /°C	JIS R1618	7.2	11.5	11.5	9.6	3.7	3.7	2.4	
		40 ~ 800°C			7.6	12.1	12.1	—	4.4	4.4	3.2	
	Thermal Conductivity		20°C	W/(m · K)	JIS R1611	14	4	4	2	60	200	25
	Specific Heat			J/(g · K)	JIS R1611	0.45	0.71	0.71	0.59	0.67	0.67	0.64
Electrical Characteristics	Heat Shock Resistance		(Put in water)	°C	JIS R1648	—	—	—	—	400	—	550
	Dielectric Strength		KV/mm		JIS C2141	11	—	—	—	—	—	—
	Volume Resistivity	20°C		Ω · cm		>10 ¹³	10 ¹²	10 ¹²	10 ¹²	10 ⁵	10 ⁸	>10 ¹⁴
		300°C				10 ¹⁰	—	—	—	10 ⁴	10 ⁴	10 ¹²
		500°C				10 ⁷	—	—	—	10 ³	10 ³	10 ¹⁰
	Dielectric Constant		(1MHz)			—	11	—	—	—	—	—
	Dielectric Loss Angle		(1MHz)			(× 10 ⁻⁴)	5	—	—	—	—	—
Loss Factor				(× 10 ⁻⁴)		55	—	—	—	—	—	
Chemical Characteristics	Nitric Acid (60%) 90°C ,24H		WT Loss mg/cm ²	JIS R1614	—	—	—	—	0.04	≠ 0.00	—	
	Sulphuric Acid (95%) 95°C ,24H				—	—	—	—	0.01	≠ 0.00	—	
	Caustic Soda (30%) 80°C ,24H				—	—	—	—	≠ 0.00	≠ 0.00	—	

※The values are typical material properties and may vary according to products configuration and manufacturing process. For more details, please feel to contact us.