

Main Material Line-up

			Quartz Glass/Silica			Alumina		Yttria	Silicon	Silicon Carbide		Boron Carbide	Carbon			Hydroxyapatite		
			High-purity quartz glass	High-purity synthetic silica glass	GLASSUN Fused silica refractory	SAPPHAL High-purity translucent alumina	ADS High-purity alumina	EXYRIA High-purity yttria	High-purity single crystal silicon	TPSS High-purity silicon impregnated silicon carbide	CERASIC Sintered silicon carbide	HE766 Recrystallized silicon carbide	Sintered boron carbide	High-purity graphite	CLEAR CARBON High-purity SiC coated graphite	CERAPHITE Robust and sturdy carbon	3D-Inter-connected porous structure hydroxyapatite	
Typical Products			Quartz glass crucibles	Photomask substrates	Fused silica refractories	Alumina plasma etcher parts	Lapping plates	Yttria plasma etcher parts	Silicon focus rings Silicon susceptors	SiC wafer boats SiC process tubes	SiC heat-resistant structural parts SiC polishing plates	SiC setters & saggars	Blasting nozzles	Carbon crucibles Carbon heaters	Carbon susceptors	Carbon air sliders	Ceramic bone substitutes	
Bulk Density		g/cm ³	2.2	2.2	1.95	3.99	3.9	4.9	2.33	3.0	3.15	2.4	2.52	1.88	-	1.40	0.79	
Mechanical Properties	Bending Strength	Room Temp. MPa	105	105	13.1	300	350	110	~300	260	450	42	400	40	40	90	4.95	
		High Temp. MPa	149 900°C	149 900°C	-	-	-	-	-	-	280 1200°C	450 1450°C	40 1300°C	-	-	-	-	-
	Young's Modulus	GPa	72	72	-	395	360	170	190	360	420	160	420~460	10	-	17	-	
	Poisson's Ratio	-	0.17	0.17	-	0.23	0.23	0.30	0.27	0.16	0.18	-	0.21	0.12	-	0.18	-	
	Vickers Hardness	GPa (kgf/mm ²)	9.7GPa (950)	9.7GPa (950)	-	17.7GPa (1770)	16GPa (1600)	6.1GPa (600)	10.6GPa (1040)	20.4GPa (2000)	23.5GPa (2300)	-	28.6~34.7GPa (2800~3400)	60Hs	-	100Hs	-	
	Fracture Toughness (K _{IC})	(MPa·m ^{1/2})	-	-	-	4.0	4.5	1.2	-	4.0	3.5	-	3~5	-	-	-	-	
Thermal Properties	Coefficient of Thermal Expansion		x10 ⁻⁶ /K	0.5 RT~1000°C	0.65 RT~1000°C	0.4 RT~1000°C	8.0 RT~900°C	7.8 RT~900°C	8.2 RT~900°C	3.9 RT~1000°C	4.2 RT~1000°C	4.5 RT~1000°C	4.3 RT~1000°C	4.5 RT~1000°C	4.8 RT~450°C	4.8 RT~450°C	3.2 RT~450°C	-
	Thermal Conductivity	Room Temp. W/(m·K)	1.5	1.4	-	35	30	14	157	220	170	105	20~40	107	-	-	-	0.4
		High Temp. W/(m·K)	-	3(900°C) (t2.0mm)	1.02(1000°C)	9(1000°C)	8(1000°C)	-	-	55(1000°C)	55(1000°C)	-	-	52(1000°C)	-	-	-	
	Thermal Shock Resistance ΔTc			>1000	>1000	-	200	220	130	-	350	450	-	-	-	-	-	-
	Max. Use Temperature		°C	1100	1000	1000	1800	1500	2000	1300	1370	1500	1500	-	3000 (inert atmos.)	1500 (inert atmos.)	2000 (inert atmos.)	-
Electrical Properties	Electrical Volume Resistivity		°C	10 ¹⁸	10 ¹⁸	-	10 ¹⁷	10 ¹⁶	10 ¹⁶	2.4x10 ⁴	10 ¹¹ ~10 ⁻¹	10 ⁴ ~10 ⁶	-	10 ⁻¹ ~10 ¹	1.1x10 ⁻³	-	5.0x10 ³	-
	Dielectric Constant		Ω·cm	3.58 1MHz	3.58 1MHz	-	10.1 10GHz	9.9 10GHz	12.0 13.56MHz	-	-	-	-	-	-	-	-	-
	Dielectric Loss (Tan Delta)			1.5x10 ⁻⁴ 1MHz	1.5x10 ⁻⁴ 1MHz	-	1.0x10 ⁻⁴ 10GHz	1.0x10 ⁻³ 10GHz	6x10 ⁻⁴ 13.56MHz	-	-	-	-	-	-	-	-	-

These values are typical and should not be considered as specifications. The characteristic values may vary depending on product shape and conditions of use.