

● Firing jig/alumina-based

Product name Component		016	106	115	214	202	201	314	663	683	632	
		Al <sub>2</sub> O <sub>3</sub> 99.99%	Al <sub>2</sub> O <sub>3</sub> 99.8%	Al <sub>2</sub> O <sub>3</sub> 99.8%	Al <sub>2</sub> O <sub>3</sub> 99.6%	Al <sub>2</sub> O <sub>3</sub> 99.6%	Al <sub>2</sub> O <sub>3</sub> 99.6%	Al <sub>2</sub> O <sub>3</sub> 99.6%	Al <sub>2</sub> O <sub>3</sub> 93%	Al <sub>2</sub> O <sub>3</sub> 80%	Al <sub>2</sub> O <sub>3</sub> 80%	Al <sub>2</sub> O <sub>3</sub> 80%
Ceramic Properties	Bulk Specific Gravity JIS R2205	3.9	3.9	3.2	2.6	1.8	1.5	2.6	2.4	2.3	1.5	
	Porosity(%) JIS R2205	0	0	11	35	55	63	28	29	30	56	
	Bending Strength(MPa) *(1) JIS R1601	400	310	255	56	22	7	13	25	28	27	
	Coefficient of Thermal Expansion( $\times 10^{-6}$ ) 100→1000°C JIS R1618	8.1	7.8	7.8	8.0	8.2	8.3	6.0	5.2	5.5	5.4	
	Thermal Conductivity 20°C(W/(m · k)) JIS R1611	32.5	34.3	18.0	12.0	6.5	4.4	4.1	2.1	2.5	1.3	
	Specific Heat(J/(kg · K)) JIS R1611	0.77× 10 <sup>3</sup>	0.78× 10 <sup>3</sup>	0.76× 10 <sup>3</sup>	0.72× 10 <sup>3</sup>	0.71× 10 <sup>3</sup>	0.76× 10 <sup>3</sup>	0.75× 10 <sup>3</sup>	0.79× 10 <sup>3</sup>	0.71× 10 <sup>3</sup>	0.72× 10 <sup>3</sup>	
Independent Evaluation	Thermal Shock(°C)	500	450	500	450	400	400	600	500	600	400	
	Thermal Shock Limit Temperature(°C)	620	560	530	460	380	450	460	650	690	630	
	High temperature Bent(mm)	1200°C	-	-	-	-	0.1	0.5	-	-	-	-
		1300°C	0.1	-	-	0.1	0.9	4.9	-	0.2	0.1	-
		1400°C	0.2	0.5	0.7	1.3	8.2	25mm or more	0.1	0.5	0.4	0.2
1500°C		0.9	5.3	9.7	15.9	25mm or more	-	0.2	2.3	1.2	1.4	
Characteristic	High purity product	Highly dense, for powder metallurgy	Porous	General-purpose product for MIM	Porous for MIM	High porosity	Bent-resistant/s pall-resistant	Mullite, general-purpose grade	Mullite	High porosity		

\*The data are representative values, not guaranteed values.

\*(1) 3-point bending test

● Zirconia, yttria, spinel, cordierite

Product name Component		827	837	835	923	922	915	933	951	961	
		ZrO <sub>2</sub> Yttria- stabilized	ZrO <sub>2</sub> Calcia- stabilized	ZrO <sub>2</sub> Calcia- stabilized	Y <sub>2</sub> O <sub>3</sub> 99.9%	Y <sub>2</sub> O <sub>3</sub> 99.9%	MgAl <sub>2</sub> O <sub>4</sub>	MgAl <sub>2</sub> O <sub>4</sub>	2MgO 2Al <sub>2</sub> O <sub>3</sub> 5SiO <sub>2</sub>	2MgO 2Al <sub>2</sub> O <sub>3</sub> 5SiO <sub>2</sub> +3Al <sub>2</sub> O <sub>3</sub> 2SiO <sub>2</sub>	
Physical properties Unit Test method											
Ceramic Properties	Bulk Specific Gravity JIS R2205	4.1	4.2	3.3	2.2	2.0	3.3	2.4	1.2	1.3	
	Porosity(%) JIS R2205	30	27	43	55	60	4	30	50	52	
	Bending Strength(MPa) *(1) JIS R1601	96	18	22	18	7	160	60	20	15	
	Coefficient of Thermal Expansion(×10 <sup>-6</sup> ) 100→1000°C JIS R1618	10.9	8.1	7.7	8.0	8.0	8.7	8.6	1.7	2.6	
	Thermal Conductivity 20°C(W/(m · k)) JIS R1611	1.3	1.2	1.0	2.1	1.0	12	6.6	0.9	0.8	
	Specific Heat(J/(kg · K)) JIS R1611	0.42× 10 <sup>3</sup>	0.43× 10 <sup>3</sup>	0.44× 10 <sup>3</sup>	0.42× 10 <sup>3</sup>	0.41× 10 <sup>3</sup>	0.79× 10 <sup>3</sup>	0.78× 10 <sup>3</sup>	0.71× 10 <sup>3</sup>	0.62× 10 <sup>3</sup>	
Independent Evaluation	Thermal Shock(°C)	400	500	350	250	300	300	300	850	800	
	Thermal Shock Limit Temperature(°C)	540	300	440	480	400	490	410	1000 or more	1000 or more	
	High tempera- ture Bent(mm)	1100°C	0.2	2.3	3.9	-	-	-	-	0.5	0
		1200°C	1.0	6.3	10.8	-	0.3	0.2	0.4	25mm or more	2.1
		1300°C	2.5	18.1	25mm or more	0.3	1.9	3.8	5.9	-	25mm or more
1400°C		25mm or more	25mm or more	-	2.7	25mm or more	25mm or more	25mm or more	-	-	
Characteristic		Y <sub>2</sub> O <sub>3</sub> 3mol SOFC	CaO 4wt% general- purpose product	CaO 4wt% general- purpose product	general- purpose product	light- weight product	For firing basic, products high spe- cific gravity	For firing basic, products high porosity	High thermal shock resis- tance	Improved high tem- perature bending	

\*The data are representative values, not guaranteed values.

\*(1) 3-point bending test

