Superior Technical Ceramics
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ZIRCONIA-TOUGHENED ALUMINA SPECIFICATIONS

	Property	ASTM Method	Units	ZTA-02 US Patent 8679995	ZTA-14	ZTA-20
General	Crystal Size (Average)	Thin Section	Microns	< 2	6	3
	Color	--	--	Off White	White	White
	Gas Permeability	--	atms-cc/sec	gas tight $<10^{-10}$	gas tight $<10^{-10}$	gas tight $<10^{-10}$
	Water Absorption	C 20-97	%	0	0	0
Mechanical	Density	C 20-97	g/cc	3.96	4.17	4.30
	Hardness	Vickers 500 gm	GPa (kg/mm^2)	14 (1440)	14.5 (1478)	14.4 (1470)
	Hardness	--	R45N	81	82	82
	Fracture Toughness	Notched Beam	MPam$^{1/2}$	5	6	6
	Flexural Strength (MOR) (3 point) @ RT	F417-87	MPa (psi x 10^3)	448 (65)	586 (85)	621 (90)
	Tensile Strength @ RT	--	MPa (psi x 10^3)	259 (38)	344 (50)	350 (51)
	Compressive Strength @ RT	--	MPa (psi x 10^3)	2413 (350)	2758 (400)	2758 (400)
	Elastic Modulus	C848	GPa (psi x 10^6)	358 (52)	338 (49)	338 (49)
	Poisson's Ratio	C848	--	0.23	0.23	0.23
Thermal	C.T.E. 25 - 100° C	C 372-96	x 10^{-6}/C	6.7	6.0	6.0
	C.T.E. 25 - 300° C	C 372-96	x 10^{-6}/C	8.1	7.0	7.0
	C.T.E. 25 - 600° C	C 372-96	x 10^{-6}/C	8.3	7.1	7.1
	Thermal Conductivity @ RT	C 408	W/m K	27	24	24
	Max Use Temp	--	Fahrenheit (°F)	2732	2730	2730
		--	Celsius (°C)	1500	1500	1500
Electrical	Dielectric Strength (.125" Thick)	D 149-97A	V/mil	230	250	250
	Dielectric Constant @ 1 MHz	D 150-98	--	10.5	12.5	12.5
	Dielectric Constant	D 2520-95	--	--	--	12.4
	@ Gigahertz			--	--	9.4
	Dielectric Loss @ 1 MHz	D 150-98	--	0.0003	0.0006	0.0006
	Dielectric Loss	D 2520-95	--	--	0.0005	0.0005
	@ Gigahertz			--	9.4	9.4
	Volume Resistivity, 25°C	D 257	ohms-cm	> 1 x 10^{14}	> 1 x 10^{14}	> 1 x 10^{14}
	Volume Resistivity, 300° C	D 1829	ohms-cm	3 x 10^{12}	1 x 10^{10}	1 x 10^{10}
	Volume Resistivity, 500° C	D 1829	ohms-cm	6 x 10^{10}	2 x 10^9	2 x 10^9
	Volume Resistivity, 700° C	D 1829	ohms-cm	6 x 10^9	2 x 10^8	4 x 10^8

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