

	Composition			AL74	AL95	AL95B	AL96	AL96P	AL98	AL995	AL998	AL998E	ZTA-14	ZTA-20	MSZ-200	Y-TZP	Mullite	L-4	L-5	Cordierite	Grade A Lava	
	Property	ASTM Method	Units																			
General	% Al <sub>2</sub> O <sub>3</sub>	-	-	73.8	95.1	95.9	95.8	95.4	97.8	99.5	99.8	99.6	-	-	-	-	-	-	-	-	-	-
	Color	-	-	white	ivory	white	white	purple	white	ivory-white	ivory	ivory	off white	off white	ivory	ivory	gray - tan	tan	gray - green	orange - tan	buff - tan	
	Gas Permeability	-	-	gas tight	gas tight	gas tight	gas tight	gas tight	gas tight	gas tight	gas tight	gas tight	gas tight	gas tight	gas tight	gas tight	gas tight	n/a	n/a	n/a	porous	porous
	Density	C 20-97	g/cc	3.03	3.65	3.68	3.71	3.68	3.78	3.88	3.91	3.90	4.17	4.24	5.72	6.00	2.96	2.65	2.75	2.00	2.30	
Mechanical	Hardness	-	Mohs Scale	9	9	9	9	9	9	9	9	9	9	9	8	8	8	7	7	6	6	
	Water Absorption	C 20-97	%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	3	
	Flexural Strength	F 417-87	psi	35,000	45,000	51,000	52,000	48,000	57,000	49,000	55,000	50,000	85,000	90,000	85,000	115,000	25,000	17,000	20,000	9,500	10,000	
	Tensile Strength	-	psi	17,000	22,000	27,000	29,000	23,000	32,000	25,000	29,000	25,000	42,000	45,000	42,000	57,000	15,000	10,000	10,000	2,700	3,000	
	Compressive Strength	-	psi	200,000	265,000	300,000	300,000	285,000	325,000	310,000	325,000	310,000	375,000	400,000	400,000	425,000	150,000	80,000	85,000	24,000	25,000	
	Elastic Modulus	C 848	psi x 10 <sup>6</sup>	25	44	46	45	45	50	55	55	55	49	49	30	30	26	15	15	n/a	n/a	
	Shear Modulus	C 848	psi x 10 <sup>6</sup>	10	18	19	19	19	20	22	22	22	20	20	12	11	10	6	6	n/a	n/a	
	Poisson's Ratio	C 848	none	0.22	0.22	0.21	0.22	0.22	0.23	0.23	0.23	0.23	0.23	0.23	0.28	0.36	0.24	0.24	0.24	n/a	n/a	
	Thermal	C.T.E., 25 - 100°C	C 372-96	x10 <sup>-6</sup> /C	5.5	6.1	6.4	6.0	6.3	6.2	6.3	6.5	6.5	6.0	6.0	8.9	6.9	3.6	7.3	8.5	2.1	2.9
		C.T.E., 25 - 300°C	-	-	5.8	7.0	6.7	6.8	6.9	6.8	6.9	7.9	7.9	7.0	7.0	9.7	8.1	4.1	7.4	8.6	2.5	3.3
C.T.E., 25 - 600°C		-	-	6.3	7.7	7.5	7.5	7.6	7.6	7.6	8.1	8.1	7.1	7.1	10.0	8.7	4.8	7.5	8.6	3.0	3.6	
Thermal Conductivity, 25°C		C 408	W/m-K	4	19	22	23	21	29	30	30	30	24	24	3	3	4	3	3	3	2	
Max Use Temp (Non-loading)		-	-	Fahrenheit (F)	2800	3000	3100	3100	3100	3100	3050	3050	3050	2730	2730	2200	930	3100	2350	2350	2350	2000
	Celsius (C)			1540	1650	1700	1700	1700	1700	1700	1675	1675	1675	1500	1500	1200	500	1700	1290	1290	1290	1100
Electrical	Dielectric Strength (.125" thick)	D 149-97A	V/mil	225	250	250	250	250	260	270	290	255	n/a	250	375	250	250	260	270	120	100	
	Dielectric Constant @ 1 MHz	D 150-98	-	7.0	9.0	9.0	9.1	9.0	9.5	9.8	9.0	9.0	n/a	12.5	22.7	28.3	6.7	5.6	5.7	6.3	5.3	
	Dielectric Constant @GHz	D 2520-95	-	n/a	9.2	9.0	9.1	8.9	9.4	9.7	10.0	n/a	n/a	12.4	29.2	n/a	6.7	5.6	5.8	n/a	n/a	
				n/a	@11.0	@10.6	@10.9	@10.8	@9.8	@9.8	@9.6	n/a	n/a	@9.4	@6.2	n/a	@11.4	@9.2	@12.5	n/a	n/a	
	Dielectric Loss @ 1 MHz	D 150-98	-	0.0012	0.0006	0.0006	0.0004	0.0006	0.0006	0.0002	<0.0001	0.0007	n/a	0.0006	0.0016	0.002	0.003	0.003	0.0014	n/a	n/a	
	Dielectric Loss @GHz	D 2520-95	-	n/a	0.0009	0.0007	0.0007	0.0006	0.0005	<0.0001	<0.0001	n/a	n/a	0.0005	0.0018	n/a	0.003	0.005	0.0017	n/a	n/a	
				n/a	@12.5	@10.6	@10.9	@10.8	@9.8	@9.8	@9.6	n/a	n/a	@9.4	@6.2	n/a	@11.4	@9.2	@12.5	n/a	n/a	
	Volume Resistivity, 25°C	D 257	ohms-cm	>1E + 14	>1E + 14	>1E + 14	>1E + 14	>1E + 14	>1E + 14	>1E + 14	>1E + 14	>1E + 14	n/a	n/a	>1E + 14	>1E + 14	>1E + 13	>1E + 14	>1E + 14	>1E + 14	n/a	n/a
	Volume Resistivity, 300°C	-	-	4E + 10	5E + 12	1E + 12	3E + 12	1E + 11	8E + 11	1E + 13	3E + 12	n/a	n/a	n/a	1E + 10	5E + 07	n/a	4E + 10	2E + 13	1E + 11	n/a	n/a
Volume Resistivity, 700°C	-	-	2E + 09	1E + 12	2E + 11	1E + 12	1E + 10	9E + 10	5E + 12	6E + 09	n/a	n/a	n/a	4E + 08	2E + 06	<1E + 4	2E + 09	2E + 09	2E + 10	n/a	n/a	

**Note:** The information in this data sheet is for design guidance only. STC does not warrant this data as absolute values. Forming methods and specific geometry could affect properties. Slight adjustments can be made to some of the properties to accommodate specific customer requirements. Most of the dense materials in the table are resistant to mechanical erosion and chemical attack. STC has performed ASTM testing qualification for certain compositions, in accordance with ASTM D2442. Please consult our technical staff for appropriate material and specific test results.

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**Note:** In addition to the above compositions, STC offers a wide range of alternative materials. Please contact one of our applications engineers for material requirements that may not be shown above.



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Phone: 802 527 7726 | Fax: 802 527 1181  
 600 Industrial Park Rd. | St. Albans, VT 05478  
[www.ceramics.net](http://www.ceramics.net) | [sales@superiortechceramics.com](mailto:sales@superiortechceramics.com)