

# ALUMINA

Property	ASTM Method	Units	AL74	AL95	AL95B	AL96	AL96P	AL98	AL995	AL998	AL998E
% Alumina	-	-	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
Gas Permeability	-	-	gas tight	gas tight	gas tight	gas tight	gas tight	gas tight	gas tight	gas tight	gas tight

Density	C 20-97	g/cc	3.03	3.65	3.68	3.71	3.68	3.78	3.88	3.91	3.90
Hardness	-	Mohs Scale	9	9	9	9	9	9	9	9	9
Water Absorption	C 20-97	%	0	0	0	0	0	0	0	0	0
Flexural Strength	F 417-87	psi	35,000	45,000	51,000	52,000	48,000	57,000	49,000	55,000	50,000
Tensile Strength	-	psi	17,000	22,000	27,000	29,000	23,000	32,000	25,000	29,000	25,000
Compressive Strength	-	psi	200,000	265,000	300,000	300,000	285,000	325,000	310,000	325,000	310,000
Elastic Modulus	C 848	psi x 10 <sup>6</sup>	25	44	46	45	45	50	55	55	55
Shear Modulus	C 848	psi x 10 <sup>6</sup>	10	18	19	19	19	20	22	22	22
Poisson's Ratio	C 848	none	0.22	0.22	0.21	0.22	0.22	0.23	0.23	0.23	0.23

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
C.T.E., 25 – 300 °C	-	-	5.8	7.0	6.7	6.8	6.9	6.8	6.9	7.9	7.9
C.T.E., 25 – 600 °C	-	-	6.3	7.7	7.5	7.5	7.6	7.6	7.6	8.1	8.1
Thermal Conductivity, 25 °C	C 408	W/m-K	4	19	22	23	21	29	30	30	30
Max Use Temperature (Non-loading)	-	Fahrenheit (°F)	2800	3000	3100	3100	3100	3100	3050	3050	3050
		Celsius (°C)	1540	1650	1700	1700	1700	1700	1675	1675	1675

Dielectric Strength (.125" thick)	D 149-97A	V/mil	225	250	250	250	250	260	270	290	255
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
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	@11.0	@10.6	@10.9	@10.8	@9.8	@9.8	@9.6	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
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	@12.5	@10.6	@10.9	@10.8	@9.8	@9.8	@9.6	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	n/a
Volume Resistivity, 300 °C	-	-	4E + 10	5E + 12	1E + 12	3E + 12	1E + 11	8E + 11	1E + 13	3E + 12	n/a
Volume Resistivity, 700 °C	-	-	2E + 09	1E + 12	2E + 11	1E + 12	1E + 10	9E + 10	5E + 12	6E + 09	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.

**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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