

## ALUMINA 99.8% (AL998)

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Alumina is one of the most widely used materials for applications requiring high performance in structural, chemical, electrical, wear and erosion resistant applications. High purity alumina is also capable of very fine surface finishes suitable for valves, pump components and seals.



## PRIME FEATURES

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- High resistance to semiconductor etch chemistries
- Excellent chemical resistance to acids, bases & organics
- Small grain size, low porosity, high polishability
- High volume resistivity
- High electrical insulation
- Superior mechanical wear resistance
- Less than 100 ppm soda and silica impurity levels
- Maintains surface integrity in corrosive environments
- High mechanical strength

## TYPICAL APPLICATIONS

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- Semiconductor components for etch, PVD, CVD, CMP
- Implant and litho processes
- High power laser insulators
- E-chuck components
- Electrical connectors, feedthroughs and standoffs
- Industrial and aviation igniters, exciters and spark plugs
- Wear-resistant nozzles and rotary components
- Blood seals and valves
- Piston & sleeve pump sets
- High temperature insulators for analytical equipment
- Wire and thread guides
- Welding, plasma and laser nozzles

**(Please see reverse for specifications.)**

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# Superior Technical Ceramics

PROVIDING ADVANCED CERAMIC SOLUTIONS WORLDWIDE SINCE 1898

## ALUMINA SPECIFICATIONS

Property	Units	Test	Value	
Density	gm/cc	ASTM-C20	3.91	
Crystal Size	Microns	Thin-Section	6 - 7	
Water Absorption	%	ASTM-373	0	
Gas Permeability	atm cc/sec		0	
Flexural Strength (MOR) 20 Degrees C	MPa (Kpsi)	ASTM-F417	379 (55)	
Elastic Modulus, 20 Degrees C	GPa(psi x 10 <sup>6</sup> )	ASTM-C623	379 (55)	
Poisson's Ratio, 20 Degrees C	--	ASTM-C623	0.23	
Compressive Strength	MPa (Kpsi)	ASTM-C773	2240 (325)	
Hardness	GPa	VICKERS	15.0	
	Kg/mm <sup>2</sup>	Rockwell 45 N	86.0	
Tensile Strength, 25 degrees C	MPa (Kpsi)	ACMA TEST #4	200 (29)	
Fracture Toughness K (Ic)	MPa $\sqrt{m}$	NOTCHED BEAM	4.0	
Thermal Conductivity, 20 degrees C	W/m K	ASTM-C408	30.0	
Coefficient of Thermal Expansion, 25-1000 Degrees C	1 x 10 <sup>-6</sup> /degrees C	ASTM-C372	8.1	
Specific Heat, 100 Degrees C	J/kg*K	ASTM-E1269	800	
Thermal Shock Resistance, $\Delta T$	degrees C		200	
Maximum Use Temperature	degrees C	NO LOAD COND.	1675	
Dielectric Strength	acV/mil	ASTM-D149	290	
Dielectric Constant, 1MHz	25 degrees C	ASTM-D150	9.0	
Dielectric Loss (tan delta) 1MHz	25 degrees C	ASTM-D150	<0.0001	
Volume Resistivity	25 degrees C	ohm-cm	ASTM-D257	>10 <sup>14</sup>
	300 degrees C	ohm-cm	ASTM-D257	3x10 <sup>12</sup>
	700 degrees C	ohm-cm	ASTM-D257	6x10 <sup>9</sup>

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## CONTACT US

We look forward to working with you to provide a ceramic material solution for your application. You'll find that our nimble service culture, cross-spectrum in-house quality controls and superior engineering insight will make us an ideal partner for your next ceramic material project.

### Superior Technical Ceramics

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Note: The information in this data sheet is for design guidance only. Forming methods and specific geometry will affect exact values.