

# Sapphire Single Crystal

**Formula:** Al<sub>2</sub>O<sub>3</sub> 99.9

**Length 1:** 8mm

**Length 2:** 8mm

**Orientation:** Not Identified

**Surface Finish:** Polished on Both Sides

**Polish:** 0.025 - 0.05µm Ra

**Thickness:** 0.25mm

**CAS Number:** 1344-28-1

**UOM Code:** 013-261-92

**SKU:** 1000001722-group

**Product Code:** AL66-SH-000124

## Material Properties for Ceramics

### Chemical Resistance

Element	Value
Acids - concentrated	Good
Acids - dilute	Good
Alkalis	Good
Halogens	Good
Metals	Good

### Electrical Properties

Element	Value
Dielectric constant	7.5-11.5
Dielectric strength( kV mm <sup>-1</sup> )	15-50
Volume resistivity( Ohmcm )	>10 <sup>12</sup> @25

### Physical Properties

Element	Value
Refractive index	1.71-1.79
Useful optical transmission range	200-5500nm
Apparent porosity( % )	0

<b>Element</b>	<b>Value</b>
Water absorption - saturation( % )	0
Density( gcm <sup>3</sup> )	3.985

### **Thermal Properties**

<b>Element</b>	<b>Value</b>
Melting point( C )	2050
Upper continuous use temperature( C )	1800-1950
Specific heat( J K <sup>-1</sup> kg <sup>-1</sup> )	750@25°C
Thermal conductivity( W m <sup>-1</sup> K <sup>-1</sup> )	35-40@20°C
Coefficient of thermal expansion( x10 <sup>-6</sup> K <sup>-1</sup> )	5.8@20-1000°C

### **Mechanical Properties**

<b>Element</b>	<b>Value</b>
Tensile modulus( GPa )	350-390
Hardness - Knoop( kgf mm <sup>-2</sup> )	2000
Hardness - Vickers( kgf mm <sup>-2</sup> )	1600-1800
Tensile strength( MPa )	250-400

### **Pultrusions**

<b>Element</b>	<b>Value</b>
Compressive strength( MPa )	2100