

# Sapphire Rod

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

**Diameter:** 1.5mm

**Length:** 15mm

**Surface Finish:** Ground

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

**UOM Code:** 916-109-17

**SKU:** 1000025248-group

**Product Code:** AL66-RD-000115

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

## Thermal Properties

Element	Value
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

Element	Value
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

Element	Value
Compressive strength( MPa )	2100