

## Aluminium Oxide (Sapphire)

<b>Formula</b>	Al <sub>2</sub> O <sub>3</sub>
<b>Crystal Growth</b>	
Growth Method	Czochralski, Kyropoulos, Stepanov
Max. Diameter (inch)	Ø 4"
<b>Crystallographic Properties</b>	
Crystal Structure	hexagonal
Lattice Constant (nm)	a = 0.4758 c = 1.2991
<b>Physical Properties</b>	
Color	colorless
Density (g/cm <sup>3</sup> )	3.98
Melting Point (K)	2325
Thermal Expansion (10 <sup>-6</sup> K <sup>-1</sup> )	6.7    c, 5.0 ⊥ c
Dielectric Constant	11.5    c, 9.4 ⊥ c
Loss Tangent (@ 77K, 10GHz)	3 x 10 <sup>-8</sup>    c, 8.6 x 10 <sup>-8</sup> ⊥ c
Hardness (Mohs)	9

