

# Technical Data Sapphire / Corundum

## SPECIFICATIONS

C-Axis Deviation +/-0.1°

Surface Quality: S/D10/5;

S/D20/10; S/D40/20; S/D60/40;

S/D80/50

Orientation: Random, Zero°

Flatness: 633nm per 25.4mm

Properties	Units	Value
Chemical Formula		Al <sub>2</sub> O <sub>3</sub>
Purity		> 99.99%
Density	g/cm <sup>3</sup>	3.98 to 4.1
Hardness	Moh's	9
Tensile Strength	MPa [kpsi]	190 [28]
Compressive Strength	GPa [kpsi]	2.1 [305]
Modulus of Elasticity	GPa [kip/in <sup>2</sup> ]	340-380 [49312 – 55114]
Friction Coefficient		0.10 (Coefficient of dry friction on steel)
Chemical Resistance		Inert to most chemical agents, even at high temperatures Attacked by HF at 300°C.
Coefficient of Linear Expansion PARA to C Axis, 20°C	°C <sup>-1</sup>	6.2x10 <sup>-6</sup>
Coefficient of Linear Expansion PERP to C Axis, 20°C	°C <sup>-1</sup>	5.4x10 <sup>-6</sup>
Specific Heat	J/kg-K	753 J/(K·kg) at 301°K
Thermal Conductivity, 20°C	W/m-K	41.9
Melting Temperature	°C [° F]	2030 °C [3686 °F]
Maximum Useable Temperature	°C [° F]	1950 ° [3542 °]
Dielectric Constant (Er) at 1 MHz		7.5 to 10.5
Resistivity (25°C)	Ohm-cm	> 10 <sup>16</sup>
Ne (refraction index to λ = 589.3 nm)		1.760
No (refraction index to λ = 589.3 nm)		1.769

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