MATERIAL PROPERTIES & SPECIFICATIONS

Sapphire Crystal

Sapphire crystal is a transparent form of aluminum oxide (Al2O3) with excellent mechanical, thermal, and optical properties. It is one of the hardest materials, second to diamond, ranking 9 on the Mohs scale. Sapphire has high optical transmission band from UV to Mid IR regions of electromagnetic spectrum. The crystal has a high refractive index, which makes it useful for lenses, optical windows, and laser components. Due to its' excellent thermal stability Sapphire is suitable for applications in harsh environments. It is chemically inert and highly resistant to most acids and alkalies. It is also a great electrical insulator.

	Sapphire	

Optical Properties	
Transmission Range	**0.15 to 5.5 µm**
Bubbles & Inclusions	**none**
Refractive Index	**1.71-1.79 @ 550nm**
Absorption Coefficient @ 800	**0.003 cm-1@3µm**
Crystal Structure	**hexagonal**
Birefringence	**0.008**

Physical/ Thermal Properties	
Density	**3.985g/cc**
Specific Heat	**0.75 J/g x K**
Thermal Stability	**2.050 deg C**
Knopp Hardness	**2200 kg/mm2**
Linear Expansion Coefficient @20 C	**5.5 x10-6K-1**
Band gap	**10 eV@10K**
Chemical Resistance	**Good**

Substance	Form	Diameter Range	Thickness Range	Transmission Range (µm)	Transmittance (0.3-4.0 µm)
Sapphire	Single Crystal	10 to mm *	1 to mm*	0.15-5.5	>5%

* Special orders available **
Standard finish – other finish available upon request

8 SOUTH END PLAZA ● NEW MILFORD, CT ● 06776-4200
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