Sapphire Lenses and Balls

Features:

• Extreme surface hardness and chemical resistance

•Transmission Range: Transmits wavelength ranging from 0.2 to 5.5μm

• Suitable for application from UV to MWIR

Descriptions:

Chemically, sapphire is single crystal or aluminum oxide (Al2O3) is used in transmission range from 0.2 - 5.5μm, sapphire is suitable for MWIR 3-5μmthermal imaging applications. Sapphire lenses are made from single crystal sapphire, they are ideal for demanding applications because of their extreme surface hardness, high thermal conductivity, high dielectric constant and resistance to common chemical acids and alkalis. Sapphire is the second hardest crystal next to diamonds and, because of their structural strength, sapphire windows can be made much thinner than other common dielectric windows with improved transmittance. Hangzhou Shalom EO provide the customized lenses and balls upon customer's request.

Specifications:

Materials	Optical grade sapphire crystals	Diameter Range	~300mm
Diameter Tolerance	+0.0/-0.2mm	Thickness Tolerance	+/-0.2mm
Surface Quality	60/40 S/D	Frings (N)	3
Irregularity (delta N)	1	Centration	3'
Chamfer	0.1-0.3mmx45 degree		

Physical and Optical Properties:

Transmission Range	0.17 to 5.5 μm	Refractive Index	No 1.75449; Ne 1.74663 at 1.06 μm (1)
Reflection Loss	14% at 1.06 μm	Absorption Coefficient	0.3 x 10^{-3} cm-1 at 2.4 μm(2)
Reststrahlen Peak	13.5 μm	dn/dT	13.1 x 10^{-6} at 0.546 μm (3)
dn/dμ = 0	1.5 μm	Density	3.97 g/cc
Melting Point	2040°C	Thermal Conductivity	27.21 W m-1 K-1 at 300K

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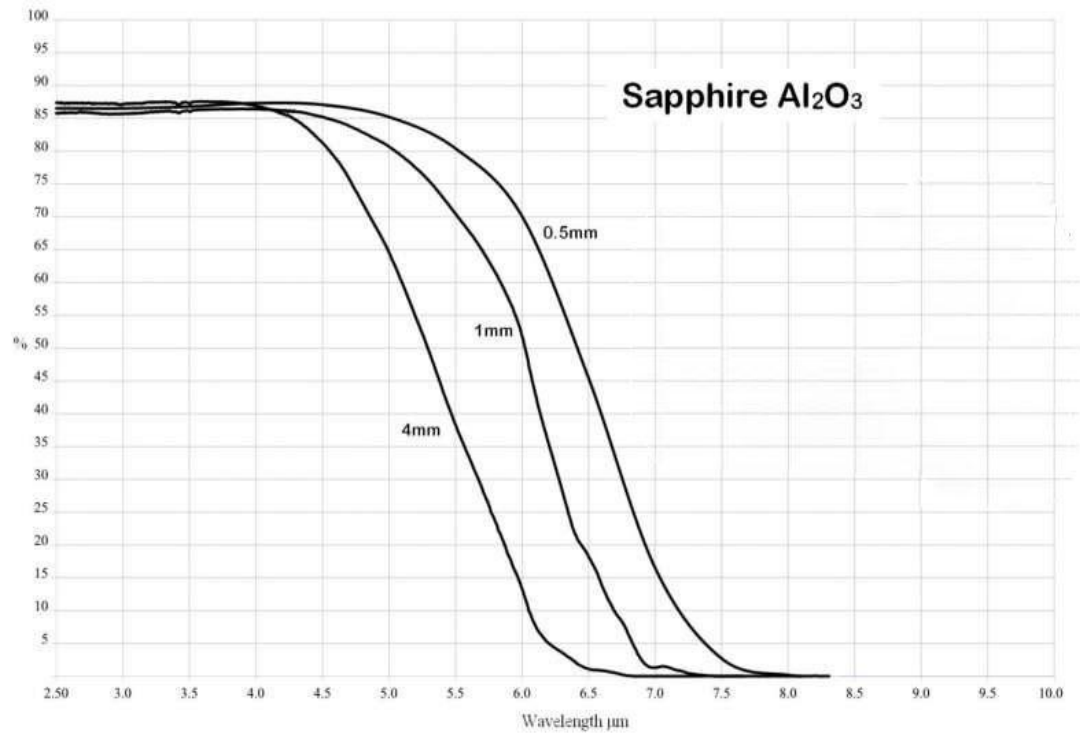
Thermal Expansion	5.6 (para) & 5.0 (perp) x 10^{-6}/K *	Hardness	Knoop 2000 with 2000g indenter
Specific Heat Capacity	763 J Kg-1 K-1 at 293K (4)	Dielectric Constant	11.5 (para) 9.4 (perp) 、at 1MHz
Youngs Modulus (E)	335 GPa	Shear Modulus (G)	148.1 GPa
Bulk Modulus (K)	240 GPa	Elastic Coefficients	C11=496 C12=164 C13=115 C33=498 C44=148
Apparent Elastic Limit	300 MPa (45,000 psi)	Poisson Ratio	0.25
Solubility	98 x 10^{-6} g/100g water	Molecular Weight	101.96
Class/Structure	Trigonal (hex), R3c		

Technical images:

1. Transmission of Sapphire at Infrared wavelength range (no coating)



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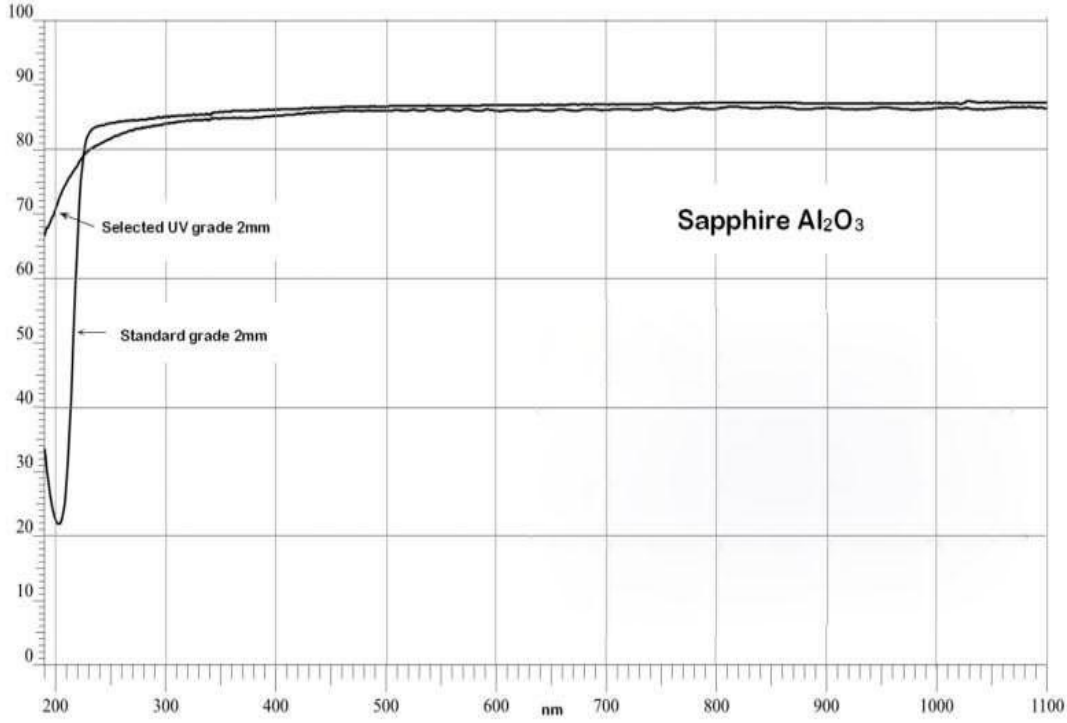
2. Transmission of Sapphire at UV wavelength range (no coating)



Related products:

1) Infrared lenses -> CaF2 lenses
2) Infrared lenses -> Silicon lenses
3) Infrared windows -> Sapphire windows

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