

Saint-Gobain Spectrosil® 2200 Optical Fused Quartz

Category : Ceramic , Glass , Oxide , Silicon Oxide

Material Notes:

Spectrosil® 2200 grade is an excimer laser grade developed for maximum transmission and prolonged life in microlithography and other critical deep UV applications using KrF (248 nm) and ArF (193 nm) excimer lasers. Spectrosil® is a synthetic fused silica manufactured using a patented, environmentally friendly process that results in a virtually chlorine-free material of exceptional purity which is bubble-free and fluorescence-free. The 2000 series has excellent optical transmission from 180 nm in the deep UV through to 2000 nm in the IR. Available in ingot, rod, tube, and components. General properties of Fused Silica and Fused quartz: A very wide transmission range from UV to near IR; extremely high optical transmission, excellent resistance to high power laser energy, excellent homogeneity, high temperature resistance, very low thermal expansion (resistance to thermal shock), and chemical inertness. General uses for optical quartz are microlithography optical systems, optical fibers, photomasks, laser optics, LCD displays, light guides, optical, IR, and UV windows, spectrophotometer cells, slides, optical pyrometers, and lamp bodies/components. Information provided by Saint-Gobain Quartz PLC.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Saint-Gobain-Spectrosil-2200-Optical-Fused-Quartz.php

Physical Properties	Metric	English	Comments
Density	2.21 g/cc	0.0798 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Knoop	820	820	
Vickers Microhardness	1050 - 1350	1050 - 1350	kg/m ² Vickers DPH
Hardness, Mohs	7.0	7.0	
Modulus of Elasticity	74.0 GPa	10700 ksi	
Flexural Strength	50.0 MPa	7250 psi	Bending Strength
Compressive Strength	1100 MPa	160000 psi	
Poissons Ratio	0.17	0.17	
Shear Modulus	31.0 GPa	4500 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	0.540 Åµm/m-Å°C	0.300 Åµin/in-Å°F	average
	@Temperature 0.000 - 1000 Å°C	@Temperature 32.0 - 1830 Å°F	
Specific Heat Capacity	0.750 J/g-Å°C	0.179 BTU/lb-Å°F	
Thermal Conductivity	2.00 W/m-K	13.9 BTU-in/hr-ftÅ²-Å°F	

Thermal Properties	Metric	English	Comments
Maximum Service Temperature, Air	1050 Â°C	1900 Â°F	Normal Conditions
	1350 Â°C	2460 Â°F	Extended periods if cycles remain above 300Â°C
	1350 Â°C	2460 Â°F	
	1650 Â°C	3000 Â°F	Quick Immersion
Softening Point	1710 Â°C	3110 Â°F	Varies with thermal history
Annealing Point	1100 Â°C	2010 Â°F	Varies with thermal history
Strain Point	990 Â°C	1810 Â°F	Varies with thermal history

Optical Properties	Metric	English	Comments
Refractive Index	1.457	1.457	n_{He-Ne}; Temperature Coefficient = 10.0 ppm/K
	@Wavelength 632.8 nm	@Wavelength 632.8 nm	
	1.4667	1.4667	n_g; Temperature Coefficient = 10.6 ppm/K
	@Wavelength 435.83 nm	@Wavelength 435.83 nm	
Transmission, Visible	95 %	95 %	Including Fresnel reflection for 10 mm pathlength
UV Transmittance	95 %	95 %	Including Fresnel reflection for 10 mm path length.
	@Wavelength <=200 nm, Thickness 10.0 mm	@Wavelength <=200 nm, Thickness 0.394 in	
	>= 99.5 %	>= 99.5 %	
	@Thickness 10.0 mm, Wavelength 193.4 nm	@Thickness 0.394 in, Wavelength 193.4 nm	
	>= 99.9 %	>= 99.9 %	
	@Thickness 10.0 mm, Wavelength 240 nm	@Thickness 0.394 in, Wavelength 240 nm	

Component Elements Properties	Metric	English	Comments
SiO2	>= 99.999 %	>= 99.999 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	2.00e+10 ohm-cm	2.00e+10 ohm-cm	
	@Temperature 800 Â°C	@Temperature 1470 Â°F	
	3.78	3.78	

Electrical Properties	Metric	English	Comments
	@Frequency 100 - 2.50e+10 Hz	@Frequency 100 - 2.50e+10 Hz	
Dissipation Factor	0.000060	0.000060	
	@Frequency 1e+9 Hz	@Frequency 1e+9 Hz	
	0.00075	0.00075	
	@Frequency 1000 Hz	@Frequency 1000 Hz	

Descriptive Properties	Value	Comments
Bubble Class	0	per DIN 58927
Bubbles; Sum of CSA	< 0.03 mm ² /100 cm ³	
Inclusions	0	
Refractive Index Homogeneity	< 10 x 10 ⁻⁶	Up to 200 mm (ingot/blank)
	< 5 x 10 ⁻⁶	Up to 100 mm (ingot/blank)
Residual Strain	<5 nm/cm	
Striae	3	per MIL-G-174A; Direction Free

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