

Saint-Gobain Puorsil® B Infrared Grade Low [OH] Optical Fused Quartz

Category : Ceramic , Glass , Oxide , Silicon Oxide

Material Notes:

Puorsil® B optical infrared fused quartz is manufactured from naturally occurring quartz crystal using a plasma process to ensure a low OH. It has excellent IR transmission with a useful IR transmission up to 3500 nm. Available as ingot, discs, plates, and components with machined or polished surface finish. 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-Puorsil-B-Infrared-Grade-Low-OH-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	
Maximum Service Temperature, Air	1050 Å°C	1920 Å°F	Normal Conditions

Thermal Properties	Metric	English	Comments
	1350 Â°C	2460 Â°F	Extended periods if cycles remain above 300Â°C
	1650 Â°C	3000 Â°F	Quick Immersion
Softening Point	1650 Â°C	3000 Â°F	Varies with thermal history
Annealing Point	1120 Â°C	2050 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	96 %	96 %	Including Fresnel reflection for 10 mm pathlength
IR Transmittance	20 %	20 %	Including Fresnel reflection for 10 mm path length.
	@Thickness 10.0 mm, Wavelength 3700 nm	@Thickness 0.394 in, Wavelength 3700 nm	
	96 %	96 %	Including Fresnel reflection for 10 mm path length.
	@Wavelength <=2500 nm, Thickness 10.0 mm	@Wavelength <=2500 nm, Thickness 0.394 in	

Component Elements Properties	Metric	English	Comments
SiO2	>= 99.99 %	>= 99.99 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	2.00e+10 ohm-cm	2.00e+10 ohm-cm	@Temperature 1470 Â°F
	@Temperature 800 Â°C	@Temperature 1470 Â°F	
Dielectric Constant	3.78	3.78	@Frequency 100 - 2.50e+10 Hz
	@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	@Frequency 1e+9 Hz	
	0.00075	0.00075	

Electrical Properties	@Frequency 1000 Hz Metric	@Frequency 1000 Hz English	Comments
Descriptive Properties	Value		Comments
Bubble Class	1		per DIN 58927
Fluorescence	Blue/Violet		254 nm excitation
Granularity	Light		
Inclusions	1		per DIN 58927
Refractive Index Homogeneity	10×10^{-6}		
Residual Strain	5 nm/cm		
Striae	B		per MIL-G-174A

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