

Saint-Gobain HS Grade Optical Fused Quartz

Category : Ceramic , Glass , Oxide , Silicon Oxide

Material Notes:

HS Grade Optical Fused Quartz is a high purity, low [OH] natural fused quartz. It has excellent IR transmission, useful transmission from 260 to 3500 nm, excellent visual quality with low bubbles, inclusions, and striae, and is available in a variety of sizes and forms. It is made by electric fusion of high purity quartz powder under vacuum conditions resulting in a low [OH] (ca. 5 ppm) material. 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-HS-Grade-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	0.550 $\mu\text{m/m}\cdot\text{Å}^\circ\text{C}$ @Temperature 0.000 - 1000 $\text{Å}^\circ\text{C}$	0.306 $\mu\text{in/in}\cdot\text{Å}^\circ\text{F}$ @Temperature 32.0 - 1830 $\text{Å}^\circ\text{F}$	average
Specific Heat Capacity	0.750 J/g- $\text{Å}^\circ\text{C}$	0.179 BTU/lb- $\text{Å}^\circ\text{F}$	
Thermal Conductivity	2.00 W/m-K	13.9 BTU-in/hr-ft Å^2 - $\text{Å}^\circ\text{F}$	

Maximum Service Temperature, Air Thermal Properties	1050 Â°C Metric	1920 Â°F English	Normal Conditions Comments
	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	1730 Â°C	3150 Â°F	Varies with thermal history
Annealing Point	1140 Â°C	2080 Â°F	Varies with thermal history
Strain Point	1075 Â°C	1967 Â°F	Varies with thermal history

Optical Properties	Metric	English	Comments
Refractive Index	1.4585	1.4585	
	@Wavelength 587.56 nm	@Wavelength 587.56 nm	
Transmission, Visible	1.4667	1.4667	n_g; Temperature Coefficient = 10.6 ppm/K
	@Wavelength 435.83 nm	@Wavelength 435.83 nm	
IR Transmittance	>= 91 %	>= 91 %	Including Fresnel reflection for 10 mm pathlength
	>= 85 %	>= 85 %	
UV Transmittance	@Wavelength 2600 - 2800 nm, Thickness 10.0 mm	@Wavelength 2600 - 2800 nm, Thickness 0.394 in	Including Fresnel reflection for 10 mm path length.
	>= 92 %	>= 92 %	
UV Transmittance	@Wavelength <=2200 nm, Thickness 10.0 mm	@Wavelength <=2200 nm, Thickness 0.394 in	Including Fresnel reflection for 10 mm path length.
	90 %	90 %	
	@Thickness 10.0 mm, Wavelength 270 nm	@Thickness 0.394 in, Wavelength 270 nm	

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 800 Â°C	@Temperature 1470 Â°F	

Electrical Properties	Metric	English	Comments
Dielectric Constant	@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	0.1	per DIN 58927
Bubbles; Sum of CSA	< 0.01 mm ² /100 cm ³	
Fluorescence	Blue/Violet	254 nm excitation
Granularity	Faint	
Residual Strain	4 to 10 nm/cm	
Striae	B	per MIL-G-174A

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