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Properties of Fused Silica JGS3

Properties		Value	
Transmission Range (Medium transmission ratio)		0.18 ~ 3.5 um (Tavg >85%)	
OH- Content		5 ppm	
Fluorescence (ex 254nm)		Strong v-b	
Impurity Content		40 – 50 ppm	
Birefringence Constant		4 - 10 nm/cm	
Melting Method		Electrical melting	
Density		2.20 g/cm^3	
Abbe Constant		67.6	
Refractive Index (nd) at 588nm		1.4586	
Hardness		5.5 - 6.5 Mohs' Scale 570 KHN 100	
Design Tensile Strength		4.8 × 10^7 Pa (N/mm^2) (7000 psi)	
Design Compressive Strength		Greater than 1.1 × 109 Pa (160,000 psi)	
Bulk Modulus		3.7 × 10^{10} Pa (5.3 × 106 psi)	
Rigidity Modulus		3.1 × 10^{10} Pa (4.5 × 106 psi)	
Young's Modulus		7.2 × 10^{-10} Pa (10.5 × 106 psi)	
Poisson's Ratio		0.17	
Coefficient of Thermal Expansion		5.5 × 10^{-7} cm/cm.°C (20°C – 320 °C)	
Thermal Conductivity		1.4 W/m.°C	
Specific Heat		670 J/kg.°C	
Softening Point		1683 °C	
Annealing Point		1215 °C	
Strain Point		1120 °C	
Electrical Receptivity		7 × 10^7 ohm.cm (350 °C)	
Dielectric Properties (20°C and 1 MHz) Constant Strength Loss Factor Dissipation Factor		3.75 5 × 10^7 V/m Less than 4 × 10^{-4} Less than 1 × 10^{-4}	
Velocity of Sound-Shear Wave		3.75 × 10^3 m/s	
Velocity of Sound/Compression Wave		5.90 × 10^3 m/s	
Sonic Attenuation		Less than 11 db/m MHz	
Permeability Constants (cm^{3}mm/cm^2 sec cm of Hg) Helium Hydrogen Deuterium Neon		(700 °C) 210 × 10^{-10} 21 × 10^{-10} 17 × 10^{-10} 9.5 × 10^{-17}	
Chemical Stability (except hydrofluoric)		High resistance to water and acids	
Wavelength (um)	Refractive Index (n)	Wavelength (um)	Refractive Index (n)
0.2	1.55051	1	1.45042

0.22	1.52845	1.064	1.44962
0.25	1.50745	1.1	1.4492
0.3	1.48779	1.2	1.44805
0.32	1.48274	1.3	1.44692
0.36	1.47529	1.5	1.44462
0.4	1.47012	1.6	1.44342
0.45	1.46557	1.7	1.44217
0.488	1.46302	1.8	1.44087
0.5	1.46233	1.9	1.43951
0.55	1.46008	2	1.43809
0.588	1.4586	2.2	1.43501
0.6	1.45804	2.4	1.43163
0.633	1.45702	2.6	1.42789
0.65	1.45653	2.8	1.42377
0.7	1.45529	3	1.41925
0.75	1.45424	3.2	1.41427
0.8	1.45332	3.37	1.4099
0.85	1.4525	3.507	1.40566
0.9	1.45175	3.707	1.39936

Transmission curve of JGS3

