

# DATA SHEET COMMERCIAL GRADE - FUSED QUARTZ

Different Properties		JGS2	
Parameter	Value		
Maximum Size		<Φ300mm	
Transmission Range (Medium transmission ratio)		0.26~2.10um (Tavg>85%)	
OH- Content		150 ppm	
Fluorescence (ex 254nm)		Strong v-b	
Impurity Content		20-40 ppm	
Birefringence Constant		4-6 nm/cm	
Melting Method		Oxy-hydrogen melting	
Applications		Semiconductor and high temperature window	

Same properties			
Density		2.20g/cm <sup>3</sup>	
Abbe Constant		67.6	
Refractive Index (nd) at 588nm		1.4586	
Wavelength (um)	Refractive Index (n)	Wavelength (um)	Refractive Index (n)
0.200	1.55051	1.000	1.45042
0.220	1.52845	1.064	1.44962
0.250	1.50745	1.100	1.44920
0.300	1.48779	1.200	1.44805
0.320	1.48274	1.300	1.44692
0.360	1.47529	1.500	1.44462
0.400	1.47012	1.600	1.44342
0.450	1.46557	1.700	1.44217
0.488	1.46302	1.800	1.44087
0.500	1.46233	1.900	1.43951
0.550	1.46008	2.000	1.43809
0.588	1.45860	2.200	1.43501
0.600	1.45804	2.400	1.43163
0.633	1.45702	2.600	1.42789
0.650	1.45653	2.800	1.42377
0.700	1.45529	3.000	1.41925
0.750	1.45424	3.200	1.41427
0.800	1.45332	3.370	1.40990

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0.850	1.45250	3.507	1.40566
0.900	1.45175	3.707	1.39936

Hardness	5.5 - 6.5 Mohs' Scale 570 KHN 100
Design Tensile Strength	$4.8 \times 10^7$ Pa (N/mm <sup>2</sup> ) (7000 psi)
Design Compressive Strength	Greater than $1.1 \times 10^9$ Pa (160,000 psi)
Bulk Modulus	$3.7 \times 10^{10}$ Pa ( $5.3 \times 10^6$ psi)
Rigidity Modulus	$3.1 \times 10^{10}$ Pa ( $4.5 \times 10^6$ psi)
Young's Modulus	$7.2 \times 10^{10}$ Pa ( $10.5 \times 10^6$ psi)
Poisson's Ratio	0.17
Coefficient of Thermal Expansion	$5.5 \times 10^{-7}$ 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	$7 \times 10^7$ ohm.cm (350°C)
Dielectric Properties (20°C and 1 MHz)	
Constant	3.75
Strength	$5 \times 10^7$ V/m
Loss Factor	Less than $4 \times 10^{-4}$
Dissipation Factor	Less than $1 \times 10^{-4}$
Velocity of Sound-Shear Wave	$3.75 \times 10^3$ m/s
Velocity of Sound/Compression Wave	$5.90 \times 10^3$ m/s
Sonic Attenuation	Less than 11 db/m MHz
Permeability Constants (cm <sup>3</sup> mm/cm <sup>2</sup> sec cm of Hg)	
Helium	(700°C) $210 \times 10^{-10}$
Hydrogen	$21 \times 10^{-10}$
Deuterium	$17 \times 10^{-10}$
Neon	$9.5 \times 10^{-17}$
Chemical Stability (except hydrofluoric)	High resistance to water and acids

