

# OZ SEMICONDUCTOR GRADE FUSED QUARTZ SPECIFICATIONS



Measured at 20°C Unless Otherwise Noted

## OZ Ingot Average Impurity Contents

Elements	PPM by Wt.	Max
Aluminum (Al)	40	53
Calcium (Ca)	2.5	3.5
Copper (Cu)	0.05	0.08
Hydroxyl (OH)	150	180
Iron (Fe)	0.9	1.2
Lithium (Li)	.08	.08
Magnesium (Mg)	0.3	0.45
Manganese (Mn)	0.03	0.04
Potassium (K)	1.7	2.3
Sodium (Na)	2.5	3.8
Titanium (Ti)	0.8	1.0

## Physical & Mechanical Properties

	Natural
Specific Gravity	2.203
Mohs Hardness (Mohs)	6 - 7
Micro Hardness (kg/cm <sup>2</sup> )	800 - 1000
Knoop Hardness (100g-load, kg/mm <sup>2</sup> )	580 - 620
Young's Modulus (kg/cm <sup>2</sup> )	743 x 10 <sup>3</sup>
Rigidity Modulus (kg/cm <sup>2</sup> )	318 x 10 <sup>3</sup>
Poisson's Ratio	0.17
Compressive Strength (kg/cm <sup>2</sup> )	11,500
Tensile Strength (kg/cm <sup>2</sup> )	500
Bending Strength (kg/cm <sup>2</sup> )	700
Torsional Strength (kg/cm <sup>2</sup> )	300
Velocity of Sound for	
Compressional Wave (m/sec)	5,720
Shear Wave (m/sec)	3,620

## REFRACTIVE INDEX OF QUARTZ GLASS

WAVELENGTH (μ)	REFRACTIVE INDEX	WAVELENGTH (μ)	REFRACTIVE INDEX
0.20	1.54727	0.80	1.45337
0.25	1.50745	0.90	1.45180
0.30	1.48594	1.00	1.45047
0.34	1.47887	1.30	1.44898
0.40	1.46868	1.50	1.44749
0.48(F)	1.46318	2.00	1.44317
0.55	1.46013	2.40	1.44173
0.59(d)	1.45845	2.80	1.42389
0.65(c)	1.45640	3.10	1.41894
0.70	1.45517	3.50	1.40801

## Transmission (Thickness 10mm)

Wavelength (NM)	Percent
220	23.8
230	60.8
240	69.2
250	78.8
260	89.1
270	91.9
280	92.2
290	92.4
300	92.5

## Thermal Properties

Strain Point (°C)	Natural 1,070
Annealing Point (°C)	1,140
Softening Point (°C)	1,830
Max. Temperature (°C)	
Continuous	1,000
Limited Life	1,300
Coefficient of Expansion	Approx. 5 x 10 <sup>-7</sup>
Thermal Conductivity (Cal/cm <sup>2</sup> sec°C)	
at 0°C	0.0032
at 100°C	0.0037
Specific Heat (cal/gm°C)	
at 20°C	0.213
at 100°C	0.273

## DISPERSION OF GLASS

WAVE LENGTH (A)	$\frac{dn}{d\lambda}$
3000	-2.471 x 10 <sup>-6</sup>
4000	-1.102 x 10 <sup>-6</sup>
5000	-0.512 x 10 <sup>-6</sup>
6000	-0.350 x 10 <sup>-6</sup>
7000	-0.163 x 10 <sup>-6</sup>