HPFS® Fused Silica Standard Grade Wafers

Material Description

HPFS® Standard Grade 7980, is a high purity synthetic amorphous silicon dioxide manufactured by flame hydrolysis. The noncrystalline, colorless, silica glass combines a very low thermal expansion coefficient with excellent optical qualities and exceptional transmittance in ultraviolet. It is available various grades for different applications.

Wafer Options

Coresix produces HPFS® Standard Grade Wafers to all SEMI Standards including dimensional, flat and notch specifications. Additionally, we offer custom specifications designed to your unique needs including, alignment marks, holes, pockets, edge profile, thickness, flatness, surface quality, cleanliness or other details critical to your application.

Wafer Specifications

Attribute	Standard	Best
Grade	0F 7980	0AA - 5G
Diameter	50.8, 76.2, 100, 150, 200, 300	Custom Diameters
Diameter Tolerance	+/- 200µm	+/- 50 µm
Thickness	.5, .7, 1.0, 2.0	Custom .45mm - 12.0mm
Thickness Tolerance	+/- 50µm	+/- 5 µm
Thickness Variation (TTV)	<10µm	<1µm
Scratch and Dig	60/40	5/2
Roughnes (RMS)	<7Å	<3Å
Warp	<100µm	<20µm
Flatness	λ per Inch TIR	λ/10 per Inch TIR

Electrical Properties

Log10 Volume Resistivity	(250°C, 482°F)	11.8 ohm*cm

Mechanical Properties

Density (25°C)	2.20 g/cm^3
Elastic (Young's) Modulus	73 GPa
Shear Modulus (25°C)	31GPa
Modulus of Rupture, abraded	52.4 MPa
Bulk Modulus	35.9 GPa
Knoop Hardness (100g load)	522 kg/mm^2
Poisson's Ratio	0.16
Tensile Strength	54 MPa
Compressive Strength	1.14 GPa

Thermal Properties

Softening Point*	1585 °C
Annealing Point*	1042 °C
Strain Point*	893 °C
Specific Heat	0.770 J/(g K)
Thermal Conductivity	1.38 W/mk
Thermal Diffusivity	0.0075 cm^2/s
Thermal Expansion ** (ppm/C)	
5°C to 35° C	50.52 x 10^{-6}
0°C to 200°C	0.57 x 10^{-6}
-100°C to +200°C	0.48 x 10^{-6}
ASTM Procedures - *C-598, **E-228	

Optical Properties

Abbe Constraints	V_e 67.6	V_d 67.8
Stress Coefficient	35.0 nm/cm MPa	
Refractive Index Conditions: 22 °C, 760 mm Hg, N_2	**Refractive Index 2n**	**Thermal Coefficient Δn/ΔT3 [ppm/C]**
@435.957n_g	1.466691	10.6
@587.725n_d	1.458461	10.1
@656.454n_c	1.456364	9.9