HPFS® Fused Silica Wafer

Applications
- Micro-optics and substrates for consumer electronics
- Automobile/Robotic imaging systems
- RF components
- Industrial 3D sensors and optics
- Beam shaping elements
- Homogenizers
- Nanoimprint lithography substrates
- Hard disk masters
- Camera optics
- Molds
- Biomedical
- Refractive Optical Elements (ROEs) / Diffractive Optical Elements (DOEs)
- Blazed-wavelength and sub-wavelength gratings

Benefits
- Extraordinary low refractive index variations leading to state-of-the-art homogeneity values
- Low birefringence values
- Ultra-high purity
- Exceptional transmittance from the deep ultraviolet through the infrared region
- Ultra-low thermal expansion coefficient

Electrical Properties @ 25 °C (100Hz–10KHz)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss Tangent</td>
<td>0.00002</td>
</tr>
<tr>
<td>Dielectric Constant</td>
<td>3.79</td>
</tr>
</tbody>
</table>

Thermal Properties

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>Thermal Expansion (ppm/C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 °C to 35 °C</td>
<td>0.52 x 10⁻⁶</td>
</tr>
<tr>
<td>0 °C to 200 °C</td>
<td>0.57 x 10⁻⁶</td>
</tr>
<tr>
<td>-100 °C to +200 °C</td>
<td>0.48 x 10⁻⁶</td>
</tr>
</tbody>
</table>

Optical Properties
- Refractive Index Uniformity is 2.5X better than other fused silicas
- No Striae, ISO 10110-4 Class 5
- Abbe Constants @ 632nm: Ve 67.6, Vd 67.8, nF’-nC’ 0.006797
- Low birefringence @ 632nm: ≤ 1 nm/cm
- Stress optic coefficient @ 632nm: 35.0 nm/cm MPa
- Exceptional transmittance across a broad range

% Internal Transmittance
Surface Losses Excluded

- TTV ≤ 1 µm to ≤ 5 µm
- Bow ≤ 5 µm to ≤ 30 µm
- Warp +/- 20 µm to ± 40 µm
- Roughness ≤ 10 Å
- SORI ≤ 0.5 µm to ≤ 1.5 µm

HPFS® 7980 Wafer Grade Material Properties
- Ultra-high purity: 100% SiO₂
- No inclusions detected under high-intensity illumination
- OH content: 800–1000 ppm
- Typical diameter: 100/150/200/300 mm, Tolerance +/- 20 µm, Edge exclusion: ≤ 5 mm
- Typical thickness: 0.30-20 mm, Tolerance +/- 25 µm
- Available upon request: various sizes, semi notch/flat specifications, laser serialization
- Large volume capacity: up to 60k WPM
- Typical lead-time: 2-12 weeks
- Polish scratch/dig: 20/10 to 80/50
- State-of-the-art data provided: Multi-Surface Profiler (MSP)
HPFS® Fused Silica Wafer
Glass with low birefringence and CTE, ultra-high purity with leading optical performance, and excellent RF dielectric properties.

Corning’s continuous efforts in research and development along with its ongoing dedication to technology leadership play a major role in Corning’s ability to provide qualified, authentic, HPFS® Fused Silica Wafer products to its customers. Using world-class metrology capabilities, Corning is able to produce leading edge HPFS® Fused Silica wafers with extraordinary characteristics — ultra-pure glass with leading optical performance, low birefringence and CTE, and excellent RF dielectric properties.