Applications

- Micro-optics and substrates
- Refractive and diffractive optical elements (ROEs & DOEs)
- 3D sensors, optics, spacers, heat sinks, and camera optics
- Beam shaping elements
- Homogenizers and optical sensors
- RF components
- Nanoimprint lithography substrates
- Hard disk masters and molds
- Blazed-wavelength and sub-wavelength diffraction gratings

Benefits of Corning Wafer-Level Optic Solutions

- Various melting and forming methods enable significant volume supply of high-precision wafers with lowest thickness variation: part to part and batch to batch
- Compatible with wafer-level optic and semicon manufacturing processes and legacy equipment and tools
- Supporting capabilities include ceramics, automated laser glass-cutting, photostructuring, bonding, dicing, and coatings
- Best-in-class metrology minimizes reliability risks and enables fine resolution data across the full wafer
- Fracture mechanics glass strength experts available to train and consult on many applications

Material Properties and Attributes

- Diameters: 100/150/200/300 mm
- Diameter tolerance*: +/- 0.200 mm
- Thickness range: 0.10-5.0 mm
- Thickness tolerance*: +/- 0.020 mm
- Available upon request: Various sizes/shapes/features, semi notch/flat specifications, laser serialization, laser processing, structuring, holes, bonding, coatings
- Large volume capacity: up to 60k WPM
- Typical lead-time: 2-12 weeks
- Polish scratch/dig: 20/10 to 80/50 per military spec
- World-class Tropel® FlatMaster® MSP metrology
  *Other tighter tolerances available upon request

Typical Properties and Attributes

<table>
<thead>
<tr>
<th>Property</th>
<th>Maximum Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTV</td>
<td>≤ 1 µm to ≤ 5µm</td>
</tr>
<tr>
<td>Bow</td>
<td>≤ 5µm to ≤ 30µm</td>
</tr>
<tr>
<td>Warp</td>
<td>+/- 20µm to ± 40µm</td>
</tr>
<tr>
<td>Surface roughness (Ra)</td>
<td>≤ 10Å</td>
</tr>
<tr>
<td>SORI</td>
<td>≤ 0.5µm to ≤ 1.5µm</td>
</tr>
</tbody>
</table>

Low-loss, High-frequency Electrical Performance

Multiple Compositions* for Diverse Applications

<table>
<thead>
<tr>
<th>Glass/CTE</th>
<th>Abbe Value $v_D$</th>
<th>Refractive Index $n_D$</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG 0.5</td>
<td>67.8</td>
<td>1.459</td>
</tr>
<tr>
<td>SG 5.1</td>
<td>65.0</td>
<td>1.487</td>
</tr>
<tr>
<td>SG 7.1</td>
<td>60.7</td>
<td>1.492</td>
</tr>
<tr>
<td>SG 7.8</td>
<td>61.7</td>
<td>1.496</td>
</tr>
<tr>
<td>SG 3.4</td>
<td>62.7</td>
<td>1.510</td>
</tr>
<tr>
<td>SG 3.6</td>
<td>62.7</td>
<td>1.510</td>
</tr>
<tr>
<td>SG 8.2</td>
<td>64.2</td>
<td>1.517</td>
</tr>
<tr>
<td>SG 9.3</td>
<td>58.9</td>
<td>1.523</td>
</tr>
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<td>57.1</td>
<td>1.523</td>
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<td>61.1</td>
<td>1.527</td>
</tr>
<tr>
<td>SG 9.0</td>
<td>55.6</td>
<td>1.530</td>
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<tr>
<td>SG 10.0</td>
<td>41.6</td>
<td>1.601</td>
</tr>
</tbody>
</table>

*Active glasses shown here; Others available upon request
Corning works closely with customers to identify the ideal set of solutions for wafer-level optics applications. We offer multiple glass and ceramic compositions, various coatings, bonding and structuring techniques, and world-class measurements to provide our customers with optimized solutions for wafer-level optic applications.

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