Corning supplies a variety of polished and machined glass wafers for use in the fast-growing MST/MEMS (Micro Systems Technology/Micro-Electrical-Mechanical Systems) technologies.

The substrates are produced using the *industry standard* Pyrex® (Corning code 7740) and other silicon thermal expansion matching glasses, such as Corning code 7070; coupled with innovative manufacturing techniques, world class measurement, and global sales and technical support.

**Materials:** Pyrex® 7740 Borosilicate Glass 7070 Lithia Potash Borosilicate

<table>
<thead>
<tr>
<th>Glass Properties:</th>
<th>7740</th>
<th>7070</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mechanical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Density (g•cm(^{-3}))</td>
<td>2.23</td>
<td>2.13</td>
</tr>
<tr>
<td>Young Modulus (G Pa)</td>
<td>62.75</td>
<td>51.00</td>
</tr>
<tr>
<td>Poisson Ratio</td>
<td>0.20</td>
<td>0.22</td>
</tr>
<tr>
<td>CTE, 0-300°C (x10(^{-6})•°C(^{-1}))</td>
<td>3.25</td>
<td>3.20</td>
</tr>
<tr>
<td><strong>Viscosity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Point (°C) 10(^4) Poise</td>
<td>1252</td>
<td>1068</td>
</tr>
<tr>
<td>Softening Point (°C) 10(^7.6) Poise</td>
<td>821</td>
<td>n/a</td>
</tr>
<tr>
<td>Annealing Point (°C) 10(^13) Poise</td>
<td>560</td>
<td>496</td>
</tr>
<tr>
<td>Strain Point (°C) 10(^14) Poise</td>
<td>510</td>
<td>456</td>
</tr>
<tr>
<td><strong>Electrical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log volume resistivity (Ωcm): 250°C, 350°C</td>
<td>6.1, 4.6</td>
<td>11.2, 9.1</td>
</tr>
<tr>
<td>Dielectric Constant, 20°C, 1MHz</td>
<td>4.6</td>
<td>4.1</td>
</tr>
<tr>
<td>Loss Tangent, 20°C, 1 MHz (%)</td>
<td>0.5</td>
<td>0.06</td>
</tr>
</tbody>
</table>
Standard Diameters:

SEMI standard wafer diameters:
- 75.0mm +/- 0.5mm
- 100.0mm +/- 0.5mm
- 125.0mm +/- 0.5mm
- 150.0mm +/- 0.5mm

Other shapes and sizes (for example, rectangles) will be quoted upon request.
Drilled or machined wafers are also available upon request.

Standard Thickness:

- 1.0mm +/- 0.025mm
- 0.5mm +/- 0.025mm

Orientation Flats:

SEMI standard flats will be quoted upon request.

Edge Beveling:

Standard for 1.0 and 0.5mm thick wafers.

Warp:

Less than 20 microns.

Total Thickness Variation (TTV):

Less than 20 microns.

Surface Finish:

Both sides polished to Ra < 15Å typical.
Inspected under intensive light (approximately 1500 lux) for scratches and cracks;
top and bottom surfaces - no faults found.

Inclusions:

No inclusions greater than 0.3mm diameter allowed.
No open inclusions or bubbles.

Edge Chips:

No chips greater than 1.0mm diameter.

Packaging:

“Coin Stack” canister, foam packed at each end.
Wafers interleaved with lint free spacers.
25 wafers per canister.
Wafer cassettes or carriers are available at additional cost.

Hole Drilling Guidelines:

(Typical)

Feature location +/- 0.05mm
Minimum hole diameter 0.25mm
Hole diameter tolerance +/- 0.05mm
Matrix hole pitch, minimum 1.5 x hole diameter

Thermal Expansion

Corning 7070
Corning 7740 & <110> Silicon

Cooling Curve

Specialty Lighting & Materials

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1M 20.82 6/99 Goff