Ultra-Thin Glass for Electronics Applications

SCHOTT is offering a portfolio of glass types in the thickness range of 25 – 210 μm

Product Information
SCHOTT ultra-thin glass is available in different glass types with different chemical and physical properties. It is produced with the untouched surface of our continuous down-draw process.

Applications
- Semiconductor IC Packaging and 2.5D Interposer
- Electronic and Optical Sensors
- Energy Storage Devices
- Organic Electronics incl. Oxygen and Moisture Barrier
- High Strength, Scratch Resistant Touch & Cover Glass

Supply Formats and Geometrical Tolerances

<table>
<thead>
<tr>
<th>Thickness</th>
<th>25, 30, 50, 70, 100, 145, 175 and 210 μm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheet size</td>
<td>up to 500 x 500 mm²</td>
</tr>
<tr>
<td>Wafer size</td>
<td>50, 100, 150, 200 and 300 mm Ø</td>
</tr>
<tr>
<td>Surface roughness Ra</td>
<td>&lt; 1 nm</td>
</tr>
<tr>
<td>Total thickness variation</td>
<td>≤ 5 μm</td>
</tr>
<tr>
<td>Thickness tolerance</td>
<td>± 10 μm</td>
</tr>
<tr>
<td>Format tolerance</td>
<td>± 200 μm</td>
</tr>
</tbody>
</table>

The CTE of AF 32® eco and D 263® T eco Over Temperature

<table>
<thead>
<tr>
<th>Mechanical Properties</th>
<th>D 263® T eco</th>
<th>AF 32® eco</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>2.51 g/cm³</td>
<td>2.43 g/cm³</td>
</tr>
<tr>
<td>Knoop hardness</td>
<td>470 @ 0.1/20</td>
<td>580 @ 0.1/20</td>
</tr>
<tr>
<td>Young’s modulus</td>
<td>72.9 KN/mm²</td>
<td>74.8 KN/mm²</td>
</tr>
</tbody>
</table>
Thermal Properties | D 263® T eco | AF 32® eco
---|---|---
Tg | 557°C | 717°C
CTE (20°C – 300°C) | 7.2 × 10⁻⁴ · K⁻¹ | 3.2 × 10⁻⁴ · K⁻¹
Thermal conductivity | 1.06 W/mK @ 90°C | 1.16 W/mK @ 90°C

Electrical Properties | D 263® T eco | AF 32® eco
---|---|---
Dielectric constant εᵣ | 6.7 @ 1 MHz | 5.1 @ 1 MHz
6.4 @ 1 GHz | 5.1 @ 1 GHz
6.3 @ 5 GHz | 5.1 @ 5 GHz
Dissipation factor tan δ | 0.006 @ 1 MHz | 0.003 @ 1 MHz
0.007 @ 1 GHz | 0.004 @ 1 GHz
0.010 @ 5 GHz | 0.005 @ 5 GHz

Chemical Properties | D 263® T eco | AF 32® eco
---|---|---
Glass type | Borosilicate | Alumino-borosilicate
Hydrolytic resistance | HGB 1 | HGB 1
Acid resistance | S2 | S4
Alkaline resistance | A2 | A3
Alkaline free | no | yes

Examples of Competencies to Modify Ultra-Thin Glass
Structuring by Laser or Powder Blasting
to generate vias or microchannels

![Image of laser structuring](image_url)

Example: laser structuring of SCHOTT AF 32® eco,
100 µm thickness, via diameter: 30 µm, pitch: 50 µm

Optical Properties AF 32® eco and D 263® T eco

Chemical Strengthening
By chemical toughening the edge strength of D 263® T eco
can be increased by a factor of 4

Gas Barrier Properties of Ultra-Thin Glass

![Image of gas barrier properties](image_url)