AGC EN-A1 Alkali Free Boro-Aluminosilicate Glass

Displays • Image Sensors • LC Devices • Biosensors/Arrays

Abrisa Technologies offers Asahi Glass Corporation (AGC) EN-A1 material, a highly transmissive, alkali-free thin boro-aluminosilicate glass that is ideal for highly sensitive bio-photo detection applications, high throughput sensor applications and as enhancement glass for thin displays and cover glass for micro arrays.

Its coefficient of thermal expansion (CTE) of $38 \times 10^{-7}$ is well matched to silicon, making it an ideal and economical choice for use as a glass polishing substrate for the thinning process (back grinding) of semiconductor chips supporting low profile electronic device manufacture.

**Key Features:**

- Alkali-free
- CTE well matched to silicon
- Standard thicknesses 0.3, 0.5, 0.7mm
- Sizes up to 25” x 20” (635mm x 508mm)
- High Transmittance from 400 - 2300nm
- Good chemical resistance
- Low fluorescense at genomic excitation wavelengths

**Applications:**

- Image sensor windows
- Cover glass for micro arrays
- Display enhancement glass
- Biosensors
- Glass for semiconductor thinning
- Low weight, reduced profile designs
# AGC EN-A1 Alkali Free Boro-Aluminosilicate Glass

**Displays ● Image Sensors ● LC Devices ● Biosensors/Arrays**

<table>
<thead>
<tr>
<th>Mechanical Properties</th>
<th>Measurement</th>
<th>EN-A1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>g/cm³</td>
<td>2.51</td>
</tr>
<tr>
<td>Young’s Modulus</td>
<td>GPa</td>
<td>77</td>
</tr>
<tr>
<td>Poisson’s Ratio</td>
<td></td>
<td>0.22</td>
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<table>
<thead>
<tr>
<th>Thermal Properties</th>
<th></th>
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<tbody>
<tr>
<td>CTE (Thermal Expansion)</td>
<td>(50-250°C) x 10⁻⁷/°C</td>
<td>38</td>
</tr>
<tr>
<td>Glass Transformation Point</td>
<td>°C</td>
<td>720</td>
</tr>
<tr>
<td>Strain/Softening Point</td>
<td>°C</td>
<td>950</td>
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<thead>
<tr>
<th>Optical Properties</th>
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</thead>
<tbody>
<tr>
<td>Refractive Index</td>
<td>Nd</td>
<td>1.52</td>
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<thead>
<tr>
<th>Electrical Properties</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Bulk/Volume Resistivity</td>
<td>Log (Ω • cm)</td>
<td>13.6</td>
</tr>
<tr>
<td>Dielectric Constant</td>
<td>At 0.001 GHz RT</td>
<td>5.5</td>
</tr>
<tr>
<td></td>
<td>At 10 GHz RT</td>
<td>5.5</td>
</tr>
<tr>
<td>Dissipation Factor</td>
<td>At 0.001 GHz RT</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>At 10 GHz RT</td>
<td>0.006</td>
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</table>

<table>
<thead>
<tr>
<th>Chemical Properties</th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Acid Resistance (HF 5% at 25°C, 20 min.)</td>
<td>Mg/cm²</td>
<td>3.1</td>
</tr>
</tbody>
</table>
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Transmission Curves

Options

Coatings:
- Custom V-Coat, Multi-band, Broadband AR
- AR Coatings to MIL-C-14806 A
- ITO/IMITO for EMI Shielding, Heater, LC Devices
- Custom SWP, LWP, Bandpass, UV & NIR Blocker
- Broad/Narrowband Scanning Mirror Coatings
- Deposition onto Filters, Silicon & Other Materials
- Autoclavable, Bio or Chemically Compatible

Substrates:
- Fabrication to Shape & Size
  - Cut & Seam or Circle Ground to Size & Shape
  - Precision CNC - Holes, Bevels, Steps, Notches
- Damage Resistant Substrates
  - HIE™ Aluminosilicates
  - AGC Dragontrail™
  - Corning® Gorilla®
  - SCHOTT AS 87
  - Chemically Strengthened Soda Lime Float
- Low Expansion Chemically Resistant Substrates
  - SCHOTT Borofloat® 33
- Ultra Thin and Wafer Substrates
  - AGC EN-A1
  - Corning® 0211 & Eagle XG®
  - SCHOTT AF32, D263® & AS 87
- Other
  - Applied Films & Tints
  - Gasket Application
  - Edge Treatment/Blackening

Easy-to-Clean & Anti-Fog Solutions:
- Oleo/Hydrophobic Options
- ITO Heater, HTAF Anti-Fog Solutions

Graphics & Bus Bars:
- Color Matched Epoxy Ink
- Non-Conductive Ink
- High Temperature Frit Ink
- Deadfront Ink - Partially Transmissive
- Infrared IR Transmitting Ink
- Silver Epoxy, Silver Frit, CrNiAu Bus Bars
Abrisa Technologies is a recognized global supplier of high quality, fabricated glass components, optical thin film coatings, and custom glass solutions for a wide variety of industries.

Our US based Abrisa Industrial Glass fabrication facility in Santa Paula, CA and our ZC&R Coatings for Optics facility in Torrance, CA serve diverse industries such as microelectronics and displays, semiconductor, military, automotive, aerospace, medical, biomedical and scientific R&D.

We provide custom specialty flat glass and coating products for applications such as: flat panel display, touch and gesture recognition; visible to IR imaging and surveillance; entertainment, indoor and outdoor lighting; advanced instrumentation; and photonics.

Abrisa Industrial Glass
200 South Hallock Drive
Santa Paula, CA 93060

ZC&R Coatings for Optics
1401 Abalone Avenue
Torrance, CA 90501

(877) 622-7472
www.abrisatechnologies.com
info@abrisatechnologies.com