SCHOTT BOROFLOAT® 33 Borosilicate Float Glass

Optical Windows ● Image Sensing ● Hot Mirrors ● Filters ● 3D ● Displays

Glass Fabrication

Coating Deposition

CNC Machining

Strengthening - Chemical & Heat

Screen Printing of Graphics

Abrisa Technologies, a member of HEF Photonics, is a globally recognized technology glass fabrication and optical thin film coating company with expertise in high volume manufacturing and engineering capabilities, delivering Total Solutions that provide excellent performance, fitness-for-use and economies of scale.

Our US based, state-of-the-art ISO 9001:2015 and ITAR registered facilities include Abrisa Industrial Glass in Santa Paula, CA and ZC&R Coatings for Optics in Torrance CA. These two divisions produce solutions from cut-to-order coated glass components to custom complex and ready-to-install fabricated, strengthened, optically coated, electronically enabled and branded sub-assemblies.

Our Total Solutions serve a variety of markets including Micro-Electronics, Defense and Avionics, Display, Industrial Automation, Optical Sensors, Imaging, Photonics, Medical & Dental, Life Science and more.

ABRISA TECHNOLOGIES
HEF® PHOTONICS

CERTIFIED ISO 9001:2015 · ITAR International Traffic in Arms Regulations Compliant · REACH COMPLIANT · COMPLIANT ROHS

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

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Your Total Solution Partner

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BOROFLOAT® 33 is a UV-NIR transparent borosilicate float glass with excellent optical properties and smooth low scatter surfaces straight off the float process. It is an economical high performance material, making it ideal for the volume manufacture of windows, mirrors, filters, display glass, 3D build platforms, and other components. BOROFLOAT® 33's composition lends itself to outstanding thermal resistance and sharp impact crack resistance, making it an excellent choice for challenging use environments. Abrisa Technologies offers a wide selection of glass, custom fabrication, heat toughening, optical coating, electrical connectivity, screen printing, applied films, oleophobics, laser marking, and more for a Total Solution.

Features:

- Optical Quality Borosilicate Glass
- High Transparency/Color Neutral
- Broad Spectral Range UV-VIS-NIR
- High Thermal Resistance (Shock & Gradient)
- Crack Resistant to Sharp Impact
- Low Thermal Expansion for Tight Seals

Standard Sheet Thicknesses:

Sheet Thickness	Thickness Tolerance
0.70 to 2.25 mm	± 0.05 mm
2.75 mm	± 0.10 mm
3.30 to 6.50 mm	± 0.20 mm
7.50 to 13.00 mm	± 0.30 mm
15.00 mm	± 0.40 mm
19.00 mm	± 0.50 mm
*20.00 mm	± 0.70 mm
*21.00 mm	± 0.70 mm
25.40 mm	± 1.0 mm

*Consult factory for availability

High Performance Optical Windows*

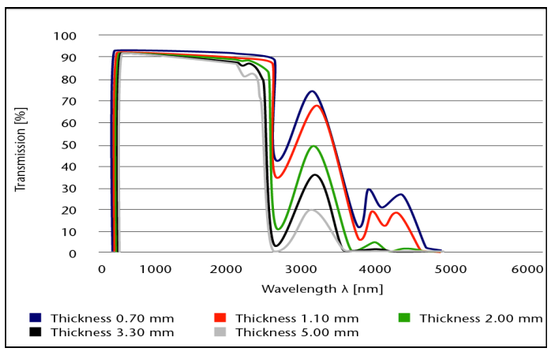
Applications:

- Outdoor VIS-NIR Image Sensing
- "True Color" Medical Imaging
- High Intensity Lighting & Curing Filters
- Heated 3D Additive Build Platforms
- Industrial Sight Glass View Ports
- Specialty Ruggedized Displays

Standard Sheet Sizes:

Thickness	Standard Sheet Size
2.0 - 15.0 mm	2,300 x 1,700 mm
0.7 - 25.4 mm	1,150 x 850 mm
16.0 - 21.0 mm	*1,700 x 1,300 mm

Broad UV-VIS-NIR Transmission:



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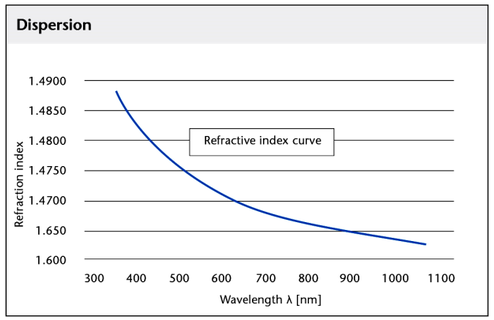
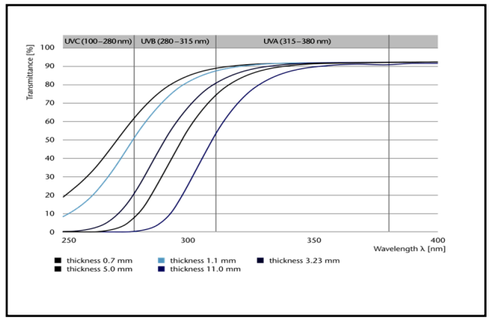
Optical Properties:

- Broad spectral range UV-VIS-NIR
- High Transparency/Color Neutral
- Excellent for Imaging/Sensing, Specialty Lighting

Medical Imaging/Lighting

Outdoor Image Sensing

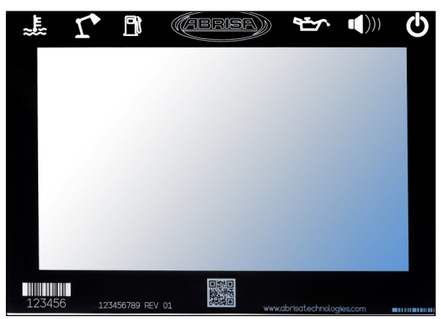




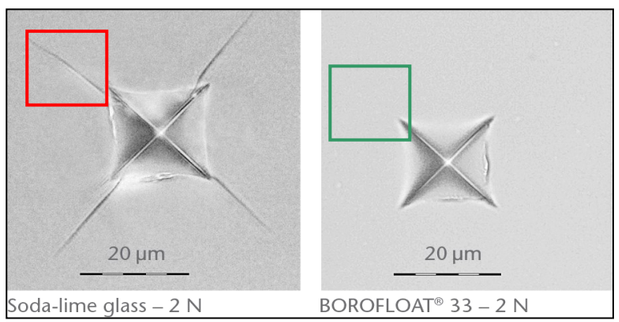
Mechanical Properties:

- Sharp Impact Crack Resistant
- Scratch Resistant
- Abrasion Resistant

Density *p (25°C)*	2.23 g/cm^3
Young's Modulus E (according to DIN 13316)	64 kN/mm^2
Poisson's Ration μ (according to DIN 13116)	0.2
Knoop Hardness $HK_{0.1/20}$ (according to DIN ISO 9385)	480



Specialty Display Glass



Sharp Impact Crack Resistance*

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Thermal Properties:

- Thermal Shock Resistant
- Thermal Gradient Resistant
- High Melting Point

Max. Operating Temperatures		
For Short Term Usage	(< 10h)	500° C
For Long term Usage	(≤ 10h)	450° C

Resistance to Thermal Gradients (RTG) & Resistance to Thermal Shock (RTS) must be considered when determining max. operating temperatures.

Coefficient of Linear Thermal Expansion (C.T.E.) α (20 - 300°C)	3.25 x 10^{-6} K^{-1}*
Specific Heat Capacity C_p (20-100°C)	0.83 kj / (kg·K)
Thermal Conductivity ʎ (90°C)	1.2W / (m·K)

* According to ISO 7991

High Intensity Lighting

3D Additive Manufacturing

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® Eagle XG®
  - SCHOTT AF32, D263® & AS 87
- **Other**
  - Applied Films & Tints
  - Gasket Application
  - Edge Treatment/Blackening
  - Laser Marking (QR & Barcodes, S/N)

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
- Dead Front Ink - Partially Transmissive
- Infrared IR Transmitting Ink
- Silver Epoxy, Silver Frit, CrNiAu Bus Bars