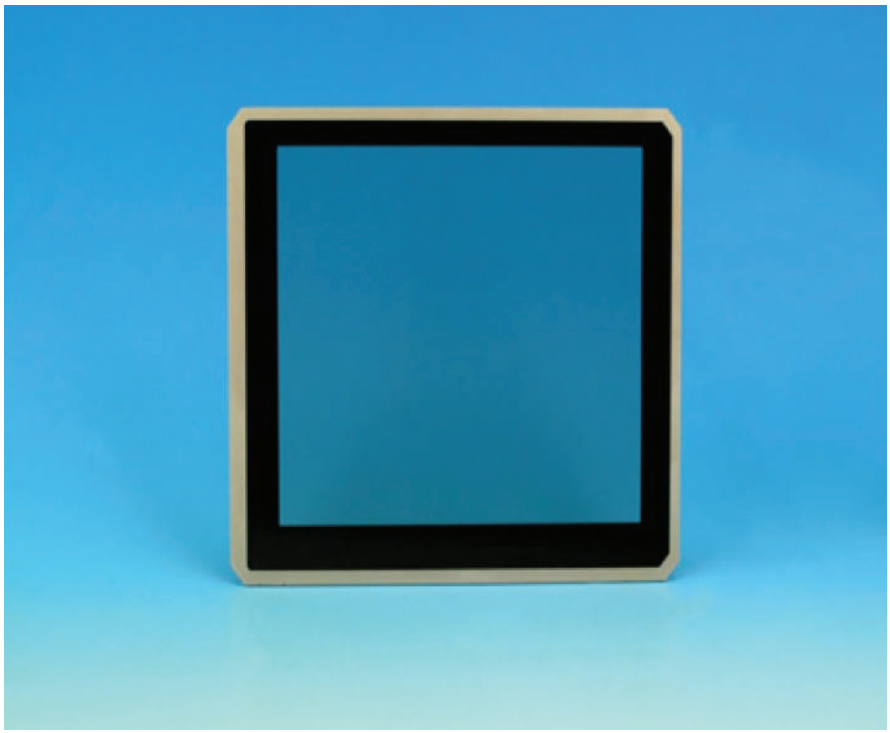
EMI Shielded Glass Windows
WIN-SHIELD G Windows

WIN-SHIELD G custom-designed windows provide EMI shielding for your display while maximizing its performance. Specially engineered optical materials enable viewing under the most challenging conditions. In addition to shielding, WIN-SHIELD G protects your display from scratches, breakage, liquids and exposure to harsh environments.

WIN-SHIELD G windows utilize various EMI shielding materials such as: index matched Indium Tin Oxide (ITO) coating, blackened plated stainless steel mesh and blackened copper mesh. ITO coatings are available with sheet resistances of 4-20 ohms/sq. Mesh products are available in 100, 80, and 50 Openings Per Inch (OPI). Our products are terminated with our high performance CHO-BOND® 578 silver epoxy. Additionally, CHO-FOIL® Metal Adhesive Tapes can be utilized for the conductive grounding surface.

We utilize advanced processes to combine EMI shielding materials with high-performance coated surfaces such as anti-reflective surfaces and integrated heaters. Other product enhancements include light control privacy film, screen printed graphics, and polarizers. Black borders and multicolor logos can be screen printed onto the glass.

WIN-SHIELD G windows can be laminated with PVB to pass safety and boot kick test requirements. Chemically strengthened or thermally tempered soda lime float glass is available for applications with stringent mechanical requirements. In our class 1000 clean room, we assemble our large formatted windows in a controlled, clean environment.



Product Features:

- Custom thickness 0.020" to 0.500" (0.5mm to 12.7mm)
- Custom sizes up to 48" x 96" (121.92cm x 243.84cm)
- Clear float glass, borosilicate
- Screen printed graphics
- EMI shielding blackened plated stainless steel mesh
- EMI shielding index matched ITO coating
- Anti-reflective coating
- Chemically Strengthened
- Thermally tempered
- Polarizer film
- Privacy light control film
- Turnkey integrated assemblies
- Integrated heaters with EMI shielding
- Able to withstand boot kick test

Typical Applications:

- Military electronics
- Tempest environments
- Shielded cabinets and racks
- Rugged LCDs
- Instrument Panels
- Digital Signage
- Avionic displays
- Medical displays
- Marine displays

Contact Information:

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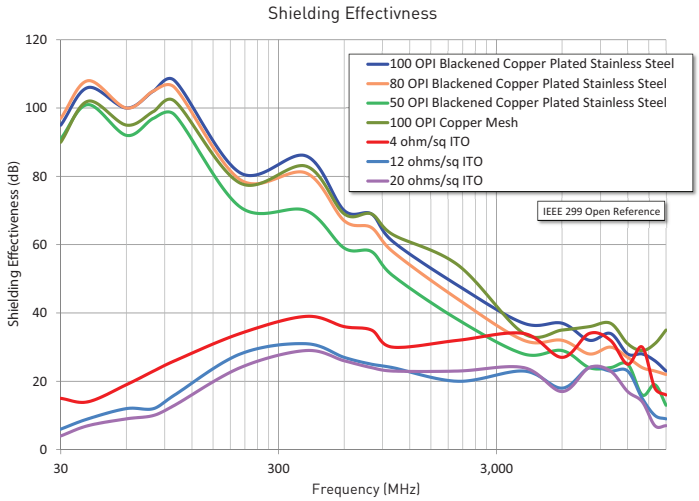
Product Information

Material Properties:

EMI Shielding Properties

EMI shielding options consist of blackened mesh and ITO conductive coatings. Selection is based on the follow crieteria: For high EMI shielding requirements 100 or 80 OPI mesh is the desirable choice for superior shielding. For large parts over 18" x 24", 100 OPI blackened copper mesh is the ideal choice for a high level of shielding. If higher light transmission and excellent clarity are desired, ITO conductive coatings are a suitable solution. Coatings are available with sheet resistances from 4-20 ohms/sq. 4 ohms/sq has higher EMI shielding than 20 ohms/sq (see shielding curve). Other sheet resistances (ohms/sq) are available upon request.



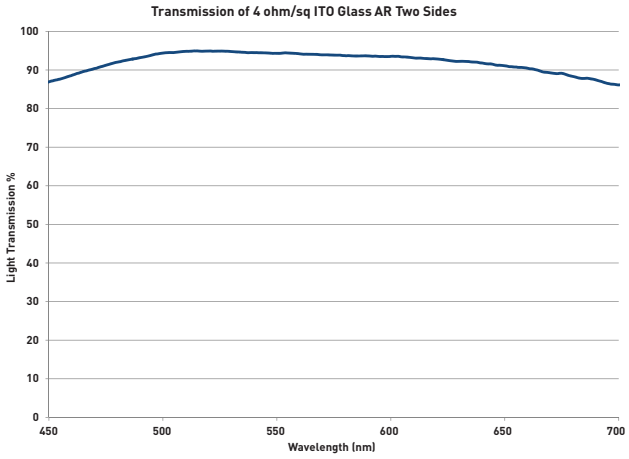
Optical Properties:

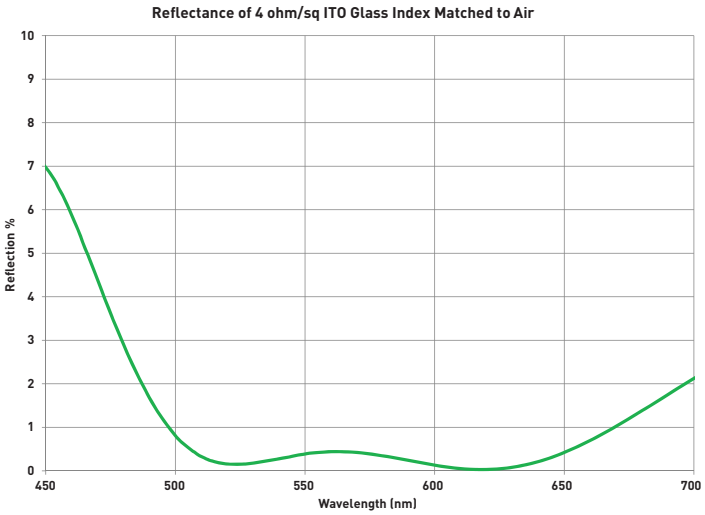
Anti-reflective Coatings

Anti-reflective (AR) coatings are used in high performance applications where high light transmission and low reflection is desired. AR coatings are used to increase the contrast ratio of a display by reducing ambient light reflections. Transmission of the overall window will increase 3-4% per coated surface when AR coatings are used. WIN-SHIELD G glass meets difficult physical environmental requirements where other materials would not be suitable. Maintaining high optical transparency and maximum clarity in demanding applications makes this glass suitable for a wide variety of applications.

Anti-reflective Coating Design:

Optimized for visible light (400-700 nm)
Average Reflection < 0.7%





ITO Coating Design

When designing an ITO coating it is important to specify the medium to which the coating will be optimized. For example an ITO coating exposed to air will be designated to be

- Index matched to 1.0

For ITO coatings that are to be optically bonded to the LCD via an adhesive, the coating should be designated to be

- Index matched to 1.45

By specifying the correct index matching, the coating will be optimized for minimal reflection and maximum transparency.

Physical Properties:

Lamination

WIN-SHIELD G glass can be laminated with a PVB interlayer to provide safety glass with antireflective surfaces and embedded EMI Shielding inside the glass laminate. The soft PVB interlayer acts to prevent sharp glass ejection and maintain a barrier in the event of breakage. PVB also adds to reduce the sound transmission through the glass laminate. A wide variety of thicknesses and sizes are available for fabrication into final shapes. Screen printing can also be added to a monolithic or laminated glass for decorative purposes and to mask bezel areas. Black border and multicolor logos are easily added to the window. Customer provided graphics can be incorporated into the design. Parts up to 48" x 96" (121.92cm x 243.84cm) can be screen printed with any graphic.

Specifications

Maximum Product Dimensions[1]	48" x 96"	122 cm x 244 cm
Typical Thickness[2]	0.020" to 0.500"	0.5mm to 12.7mm
Standard Tolerances[3]	Unlaminated Glass	± 0.010" Size ± 0.020" Buss Bars/Graphics
	Laminated Glass	± 0.030" Size ± 0.020" Buss Bars/Graphics
Environmental Specifications	Salt Solubility	24-hr salt soak (MIL-C-675)
	Abrasion	20-rub eraser (MIL-C-675)
	Humidity	24 hr (MIL-C-675)
	Temperature	4 hr -54° C and 71° C (MIL-C-14806)
	Adhesion	MIL-M-13508
Thermal	Typical Operating Temperature Range	-40 to +70°C (-40 to +160°F)
Storage	25°C (80°F), 50% relative humidity	

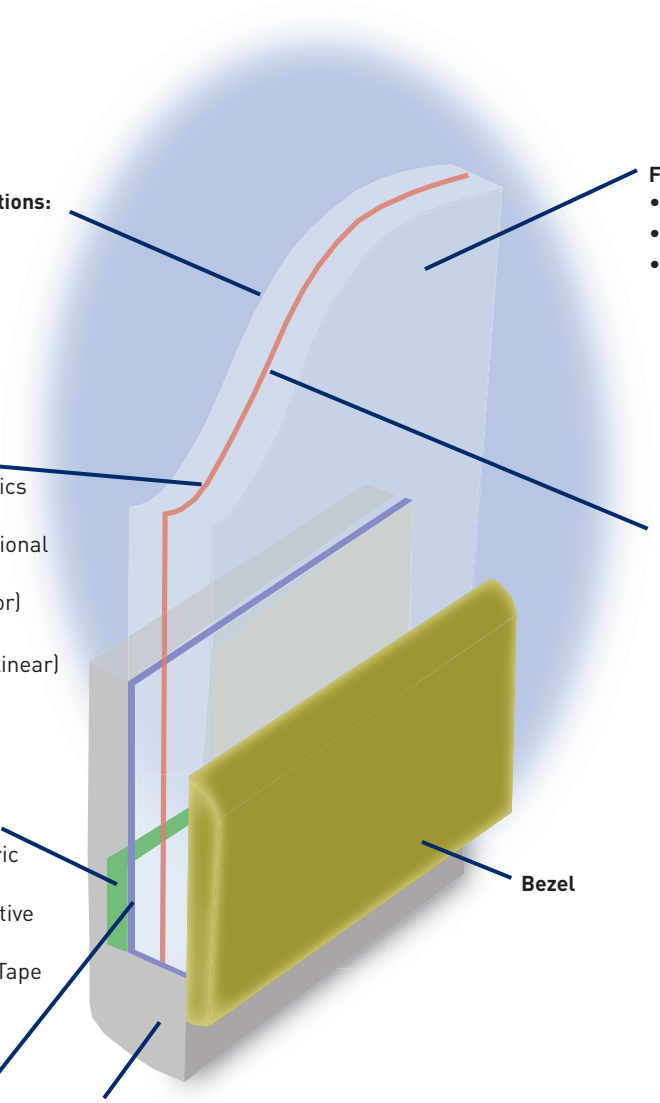
1 Custom sizes available upon request
2 Standard thicknesses are listed above. Other thicknesses are available upon request.
3 Custom tolerances available upon request

Product Information:

Design Guide (Please choose from the following options):

1. Front Surface Options:
   - Anti-reflective
   - Clear no coating
   - EMI shielding
2. EMI Shielding Options:
   - 100 OPI Blackened Stainless Steel
   - 100 OPI Blackened Copper
   - 80 OPI Blackened Stainless Steel
   - 50 OPI Blackened Stainless Steel
   - 4 Ohm/sq ITO Coating
   - 12 Ohm/sq ITO Coating
   - 20 Ohm/sq ITO Coating
3. Embedded Options:
   - Screen Printed Graphics (Borders, Logos)
   - Privacy Filters (Directional Viewing)
   - IR Blocking (Hot Mirror)
   - Night Vision
   - Polarizers (Circular, Linear)
   - None
4. Rear Surface Options:
   - Anti-reflective
   - Clear no coating
   - EMI shielding
   - Integrated heater
5. Silver Epoxy Buss Bar (CHO BOND® 578):
   - U Buss
   - L Buss
   - I Buss
6. Conductive Gasket Options:
   - SOFT-SHIELD® Fabric Over Foam (FOF)
   - CHO-SEAL® Conductive Elastomers
   - CHO-FOIL® Copper Tape

Design Options:



Rear Surface Finish Options:
- Anti-reflective
- Clear no coating
- EMI shielding
- Integrated heater

Front Surface Options:
- Anti-reflective
- Clear no coating
- EMI Shielding

Embedded Options:
- Screen Printed Graphics (Borders, Logos)
- Privacy Filters (Directional Viewing)
- IR Blocking (Hot Mirror)
- Night Vision
- Polarizers (Circular, Linear)
- None

EMI Shielding Options*:
- 100 OPI Blackened Stainless Steel
- 100 OPI Blackened Copper
- 80 OPI Blackened Stainless Steel
- 50 OPI Blackened Stainless Steel
- 4 Ohm/sq ITO Coating
- 12 Ohm/sq ITO Coating
- 20 Ohm/sq ITO Coating

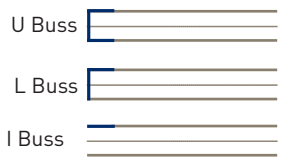
Conductive Gasket Options:
- SOFT-SHIELD® Fabric Over Foam (FOF)
- CHO-SEAL® Conductive Elastomers
- CHO-FOIL® Copper Tape

Bezel

Silver Epoxy Buss Bar (CHO-BOND® 578):
- U Buss
- L Buss
- I Buss

Enclosure

Typical Edge Terminations:



*Note: EMI shielding option can be on front or back side for ITO coatings or embedded inside lamination for mesh materials.

www.hitek-ltd.co.uk
www.parker.com/chomerics

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