

Shielded Windows

Types of Shielding material options

RFI / EMC Wire Meshes

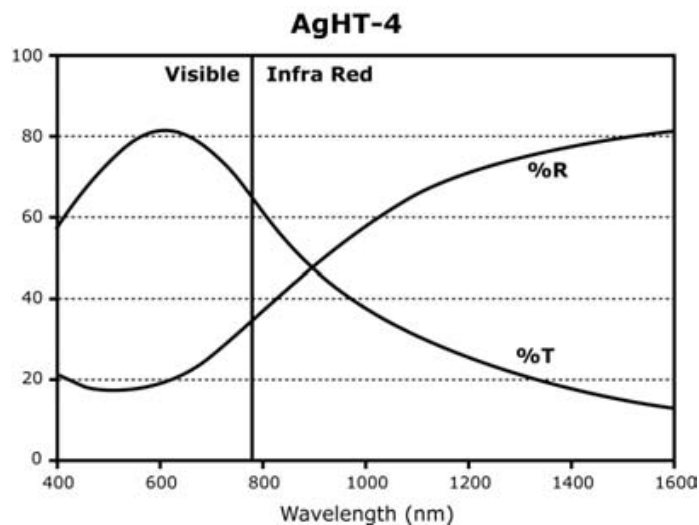
Border Precision is able to offer a range of woven metal meshes for RFI/EMC shielding. These include stainless steel, blackened stainless steel and blackened copper. These are available in mesh sizes from 50 OPI X 0.025mm wire diameter to 100 OPI X 0.05mm wire diameter. Mesh sizes available up to 500 x 750mm.

The mesh can be supplied separately or incorporated into a cast window using clear CR39 or Acrylic material for a tailor made RFI/EMC solution.

Conductive Silver Coated Films AgHT

AgHT line of transparent, highly conductive coated films specifically for use in EMI/RFI shielding and infra-red reflection applications. AgHT's unique combination of high visible light transmission, nearly neutral colour and low electrical resistance makes it ideal as an EMI shield for electronic displays and membrane switches. AgHT film products are outstanding in their ability to transmit visible light while reflection infra red heat (see graph). Products that make use of these optical characteristics include projector lamp shields, theatrical lighting filters and windows.

Standard products are AgHT-4 and AgHT-8, the number designation indicating the surface resistance in ohms per square. Both are available on rolls of optical grade polyester film.





	AgHT4	AgHT8
Visible Light Transmission	Min. 75%	Min. 82%
Infra Red reflection (2.5 - 25 microns)	Min. 80%	Min. 75%
Surface resistance (Ohms/square)	4.5±1.0	8.0±2.0
Shielding Effectiveness	24-44 dB	20-40dB

Border Precision's fully laminated RFI/EMC Shielded windows are bonded over the full size (screen) area. This is achieved by laying out the screen assembly in the correct required configuration interleaved with an adhesive interlayer material. This is subjected to heat and pressure under carefully controlled conditions that results in a fully bonded and sealed window. This strong construction has excellent physical properties and is very resistant to impact, shock and vibration. Fully laminated polycarbonate windows are exceptionally tough and suitable for the most demanding of applications. Glass, acrylic or polycarbonate may also be laminated using this method, which enhances the original material properties. It is also possible to laminate in special purpose contrast filters or tinted/coloured windows with materials.

Our cast windows are produced by loading a sheet of wire mesh directly in a thermoset polyester (CR39) or acrylic resin cast prior to moulding. The resin can be tinted a wide range of colours to suit the display requirements or have optical filters cast in. Polyester (or CR39) cast windows have exceptional stability operating at high temperature and very good scratch resistance.

Border Precision are also able to supply shielded windows based on glass, polycarbonate or acrylic or polyester coated with vacuum deposited thin films of Indium Tin Oxide (ITO) or selected metals. The films applied in this way are very thin and can have light transmissions of up to 80 – 90% mid-spectrum. The transparent conductive film coated substrates can then be laminated with other materials to improve the ruggedness and optical properties as required. The primary advantage of these window types is that they allow the display to be viewed clearly without the minor distortion or 'moiré fringing' that can occur sometimes with mesh windows on certain display types. However, mesh windows offer higher levels shielding performance and therefore ITO and metal film windows are not suitable for all applications.

As with all our EMI shielding components low impedance termination to a mating enclosure or panel is critical to the performance of a window. Border Precision have a number of options depending on the end specification for the equipment. An overview of the main methods follows below. Electrically conductive adhesives can be used to directly bond a shielded window in place. Connections to the window are normally made via a silver paint bus-bar around the perimeter of the window which makes contact with wire mesh or conductive film. Higher levels of mechanical and shielding performance can be achieved when the screen itself is bonded using a structural adhesive and then wire mesh is terminated directly to the mating enclosure or panel using various mechanical solutions or using a conductive adhesive. All shielded windows can be supplied set into a frame complete with gaskets, drilled holes or fasteners ready to install. Such assemblies can be designed for internal or external mounting.

Depending on the end user application the window can be assembled incorporating either or both conductive and environmental seals. This reduces the risk of mismatching and eliminates the assembly operations for the customer, ensuring that the window will be fully functional when assembled in place. Various gasket types can be used utilised to provide the seal and electrical contact required.

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RFI/EMC Shielding Solutions, Toolmakers, Precision Pressings,
Laser Profiling, Chemical Etching, Metal Finishing & Assembly