

WIN-SHIELD™ Optical Products



WIN-SHIELD Optical Products—Shielded Windows and Contrast Enhancement Filters

Chomerics produces a wide selection of performance-tested glass and plastic windows for visual displays requiring EMI radiation or susceptibility shielding.

These windows have been designed into commercial and military equipment to provide highly effective electromagnetic shielding while providing exceptional optical clarity and image resolution.

Chomerics' prototype-to-production capability includes an extensive line of spectrally-matched filters to meet stringent contrast enhancement performance requirements for both flat and curved configurations. By offering the best combination of EMI shielding and contrast enhancement, we've become a major supplier to manufacturers who must meet FCC and EU (European Union) requirements on digital devices.

Windows can be produced in glass, plastic, or combinations of both. EMI shielding is provided by knitted or woven wire mesh, laminated between the glass or plastic substrates, or by deposited conductive coatings. Standard construction is shown in Figure 1. Shielding effec-

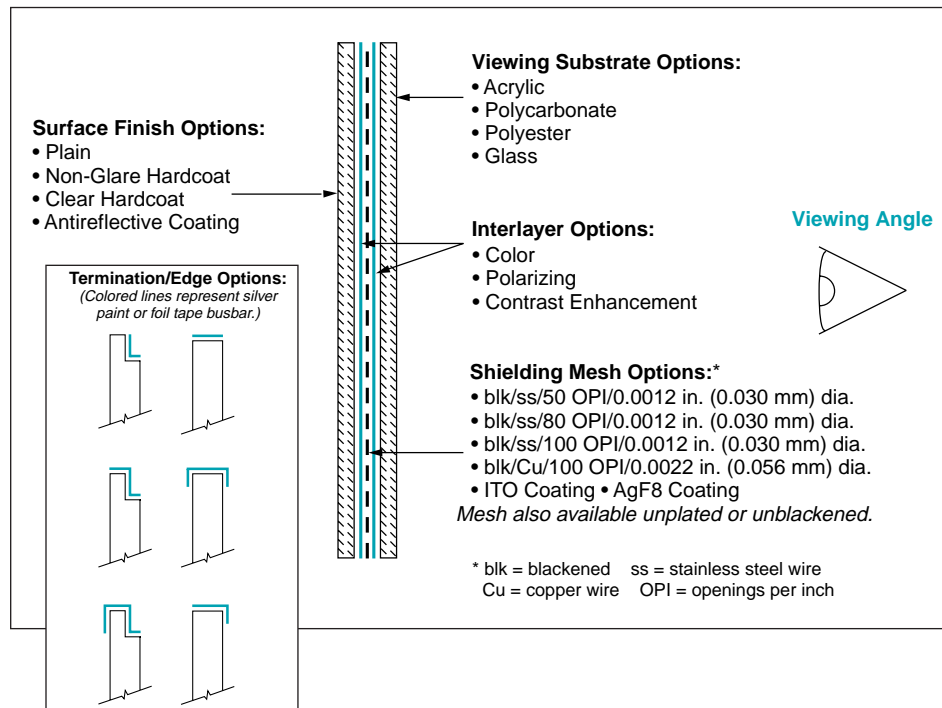
tiveness is determined by the size of the wire screen openings, electrical contact between intersecting wires and the materials, and techniques employed to terminate the wire at the frame edge. Refer to Figures 2 and 3.

Our high performance EmiClare™ Shielded Windows utilize a proprietary mesh design in a fully laminated polycarbonate assembly that affords exceptional optical clarity without compromising EMI shielding performance.

Our Applications Engineering staff and EMI Testing facilities provide the expertise necessary to design shielded window assemblies to meet specific requirements, and to verify performance. Our conductive adhesives, paints, tapes, gaskets and frames enable us to provide complete assemblies ready-to-mount.

Table 1

STANDARD COMPONENTS FOR WIN-SHIELD™ OPTICAL PRODUCTS	
Substrate materials	acrylic, polycarbonate, polyester, glass
Shielding materials	woven wire mesh, electrically conductive transparent coatings –Indium Tin Oxide, Silver Oxide
Shielding termination	conductive busbar, foil tape, extended mesh, conductive adhesive, conductive gasket
Anti-glare control	non-glare dispersive surface etch or coating on plastic and glass, multilayer anti-reflection coating on glass
Contrast enhancement	laminated broadband, high contrast narrow band, or sunlight readable spectrally matched filters, circular polarizers
Size limit and thickness range	Stainless Steel Mesh 24 x 24 in. (61 x 61 cm) 31-185 mils (0.8-4.7 mm) Copper Mesh 24 x 36 in. (61 x 91 cm) 31-185 mils (0.8-4.7 mm) AgF8 Film or Indium Tin Oxide 48 x 48 in. (122 x 122 cm) 7-8 mils (0.175-0.200 mm)



WIN-SHIELD Windows EMI Shielding Performance

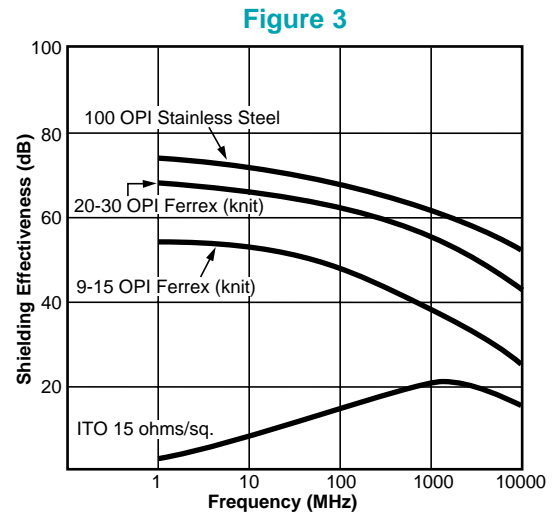
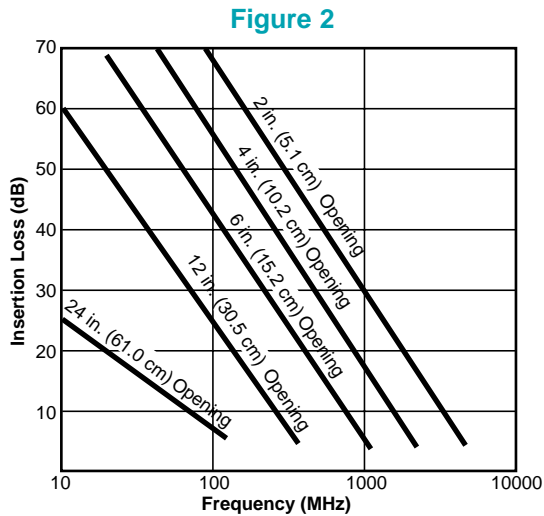


Figure 2 illustrates amount of insertion loss typically achieved through open apertures ranging from 24 in. to 2 in. (61 cm to 5.1 cm) square (per MIL-STD-285). Typical insertion losses of various window materials (properly terminated) are shown in **Figure 3**. To determine total shielding effectiveness attained for any size opening with any window material, add the appropriate curves in Figures 2 and 3 together.

Contrast Enhancement Filters

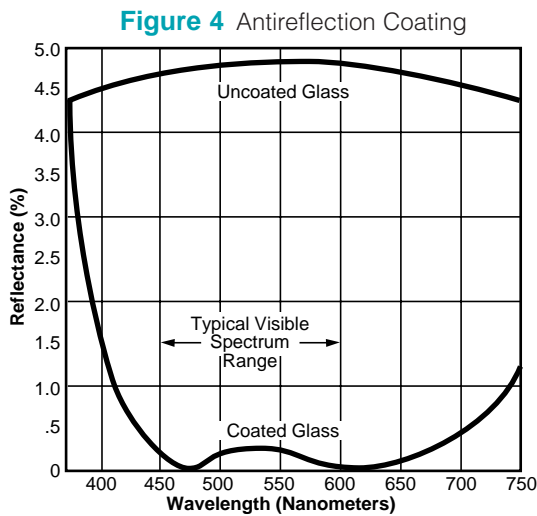


Figure 4 demonstrates the amount of glare reduction achieved with $\leq 0.35\%$ MIL-C-14806A anti-reflection coating compared to uncoated glass.

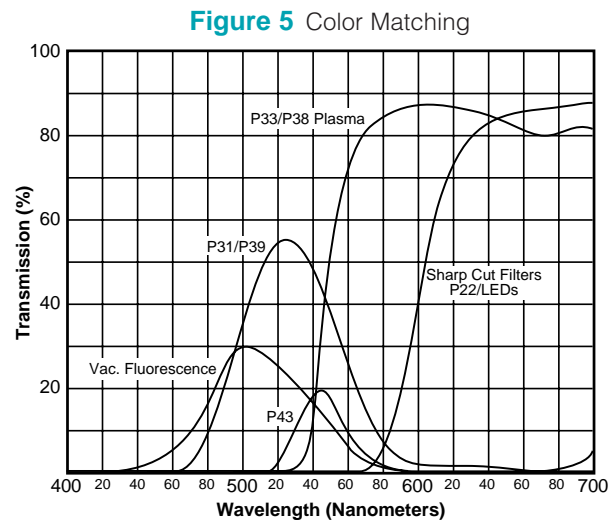


Figure 5 illustrates the light output of Chomerics' color filters. These filters are designed to match the peak wavelength of a display while selectively absorbing white light to achieve the greatest amount of display contrast.