

Dontech's Optical Fine Wire (OFW) and Micro EMI-Mesh (MEM100) for EMI/RFI Shielding Filters and Windows

Dontech manufactures a wide variety of conductive optical grids, including woven fine-wire stainless steel and copper, as well as etched copper meshes for optical EMI/RFI shielding of electronic displays, instrumentation and enclosures.

The conductive optical grids are typically embedded in glass or plastic substrates such as acrylic, polycarbonate or polyester (PET) or triacetate (TAC). The conductive ground plane is then terminated via a perimeter busbar, extended mesh or conductive gasket.

Dontech's grid counts typically range from 50 to 255 openings per inch (opi). Standard unplated wire width/diameter for most mesh counts is 0.0011" and 0.0022" for woven and 0.0005 for etched mesh. Dontech's OFW and MEM100 meshes combine excellent shielding effectiveness with optical performance, making them ideally suited for electronic displays and optics applications.

Typical applications for conductive optical grids include EMI/RFI shielding of electronic displays and enclosures used in:

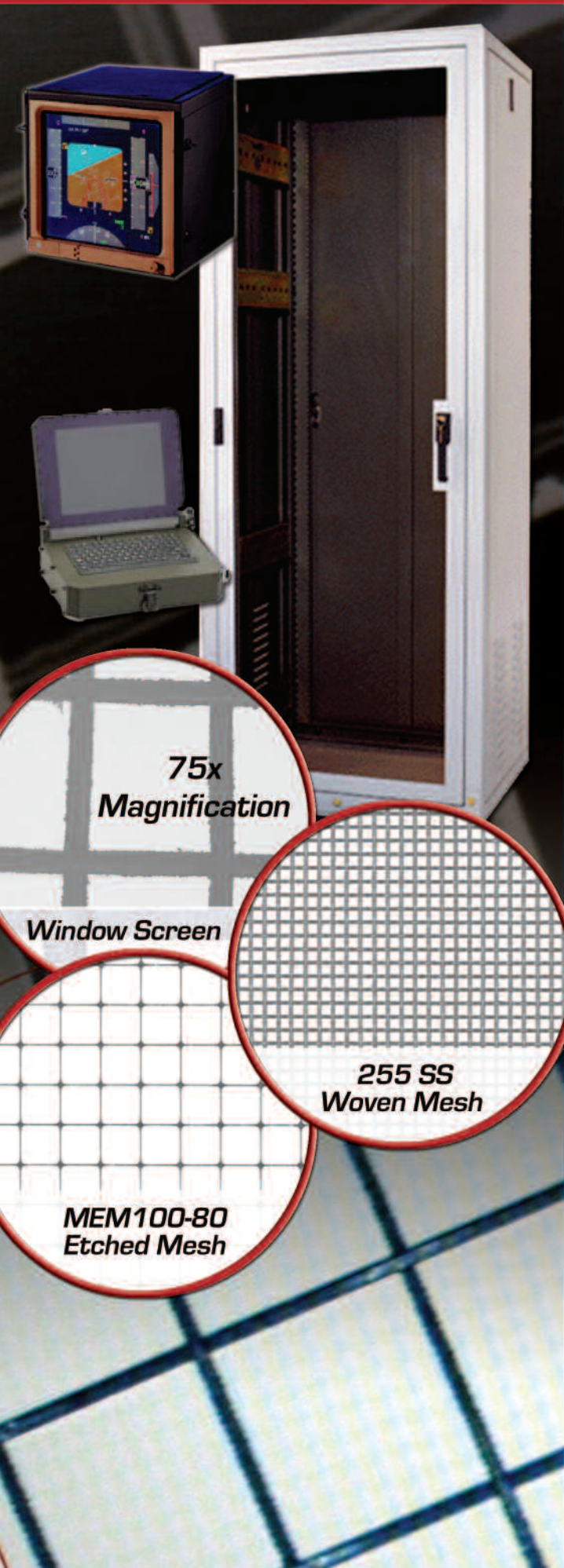
- Military applications – requiring the attenuation of radiated EMI/RFI emissions and susceptibility per MIL-STD-461 and MIL-STD-464
- Rugged computers, tactical radios, sensors and vehicle-mounted displays
- Secure communication systems to meet tempest and FCC compliance and for homeland security
- Medical displays – MRI rooms, display and observation windows
- Aircraft shielding – display and instrument panels, aircraft windows and doors
- Industrial controls, heavy equipment, shipboard electronic systems
- Test and measurement equipment – telecommunication, signal analyzers and generators

Dontech woven fine wire mesh is available unplated, blackened, or silver-plated and conductively blackened. In addition, a variety of product configurations are available for all conductive optical grids, including:

- Laminated in optical substrates: glass, polycarbonate, acrylic, PET, TAC
- Optical finishes – antiglare, antireflective, chemical/abrasion resistant
- Sheets, cut-to-size
- Applied to metal frames and gasketed
- Applied to touch screens and digitizers



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EMI Shielding Performances

Testing conducted at an independent lab, per IEEE 299 1997.

Mesh Composition Base Material/ (Plated Deposit)	Openings/ inch	Wire Diameter (inches)	Open Area	H Field		Plane Wave			
				1 MHz	10 MHz	100 MHz	400 MHz	1 GHz	10 GHz
Stainless Steel ¹	50	0.0012	88.4%	63	63	60	59	42	18
Stainless Steel ¹	80	0.0011	82.0%	68	69	70	55	44	26
Stainless Steel ¹	100	0.0011	79.2%	72	71	67	63	52	34
Copper ²	100	0.0022	60.8%	89	90	84	77	62	42
MEM 100-80 Etched Copper Mesh ³	80	0.0005	86.0%	67	66	56	49	47	24
Stainless Steel ²	230	0.0014	46.0%	97	-	-	77	73	62

All Dontech Ag-plated woven and MEM-100 meshes offer resistivity of <0.05 ohms/sq.

Notes:

¹ Silver-plated and conductively blackened

² Mesh (tested per NSA-65-6 and MIL-STD-285)

³ MEM100 Mesh is available in other mesh counts (openings/in.)

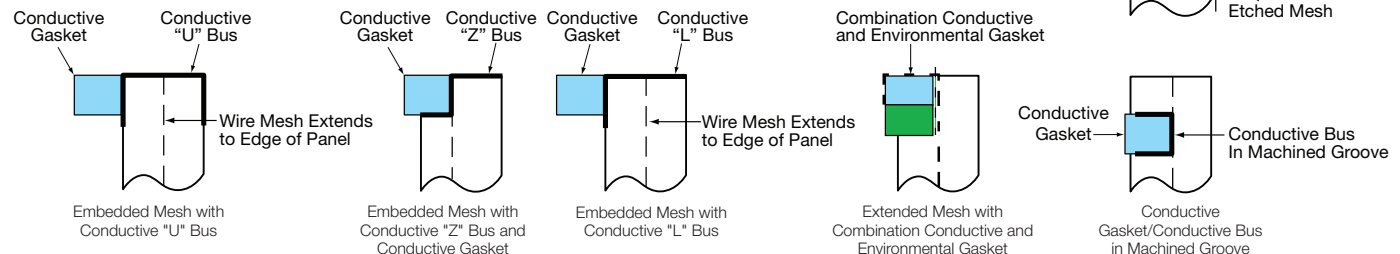
Mesh Configurations

Product Range:	Mesh available in Sheets, Cut-to-Size, Laminated
Substrates:	Glass, Polycarbonate, Acrylic, PET, ADC
Size:	Up to 4 ft. x 8 ft.
Thickness:	0.015 in. to 0.5 in.
Optical Finishes:	Clear/Gloss or Antiglare Coating for Plastics Antireflective Antireflective/Antiglare
Design Options:	Contrast Enhancement NIR Blocking Filters Colors (short pass, long pass, band pass) Transparent Heaters Neutral Density, Circular Polarizers

Standard Plain Woven Wire Meshes

Wire Type	Count	Diameter (in.)	Open area (%)
304 SS	50	0.0012	88.4
304 SS	80	0.0011	83.2
304 SS	100	0.0011	79.2
Copper	100	0.0022	60.8
316 SS	100	0.0022	60.8
Copper	145	0.0022	46.4
304 SS	150	0.0011	70.7
304 SS	180	0.0011	65.5
304 SS	200	0.0011	62.0
304 SS	230	0.0011	55.8
304 SS	250	0.0011	54.0

EMI Filter Termination Methods



Dontech Optical Fitting Process and Moiré Testing

Because a diffractive interference pattern (moiré) can occur due to the optical interference between the wire conductive optical grid with the light transmitting pixels of the electronic display, it is often necessary to rotate the mesh to reduce or eliminate this interference. Because most displays have a pixel orientation at 90 degrees, the moiré effect can be minimized by rotating the mesh at a 45 degree orientation. In addition to rotating the mesh, altering the pitch, mesh depth in the substrate, or surface finish of the substrate can also minimize this moiré pattern.

In rotating the mesh, Dontech designates mesh orientation as degrees from the positive horizontal axis. Common mesh orientations to reduce moiré include 45 degrees, 30 degrees, and 22.5 degrees. As a service, Dontech utilizes both pre-production and in-process testing to verify that the designed orientation does not produce a moiré pattern.

Company Profile:

Dontech Incorporated is an ISO-9001:2008 designer and manufacturer of optical filters, coatings and enhanced display products for military, medical and industrial applications. Since 1971 Dontech has provided innovative optical solutions worldwide.

Visit us at www.dontech.com



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