

MANUFACTURERS OF OPTOLITE CONTRAST ENHANCEMENT FILTERS  
SHIELDED WINDOWS – INSTRUMENT GLASSES  
POLARISING FILTERS

## Optolite™ Shielded Filter Windows

Optolite shielded filter windows have been designed for electronic displays, combining a high level of electromagnetic shielding with excellent contrast enhancement.

They are used extensively to minimise radio frequency emissions generated by enclosed electronic equipment and to protect electronic equipment from electromagnetic interference arising from external sources.

### Features

- *Up to 70dB attenuation*
- *In clear HSR (High Scratch Resistance) or selected coloured band pass filters to suit most displays*
- *Available flat or curved*
- *Excellent impact abrasion, heat and chemical resistance for Optolite Clear HSR*
- *Light weight*
- *Robust construction*
- *Optional blackened wire mesh to reduce mesh reflections*
- *Cast-in non glare finishes to cut down front surface reflections*
- *Mesh incorporated at any desired angle*
- *Edge termination services available*
- *Fabricated to customer requirements*

Optolite™ shielded windows have a highly conductive micro-fine wire mesh which attenuates EMI/RFI emissions. Different meshes to suit varying applications are available.

Optolite™ filters are cast in-house as a one piece filter with the mesh totally encapsulated. This approach offers customers a more cost-effective and robust solution to shielding problems, totally eliminating delamination and optical imperfections which can affect ordinary laminated windows.

### Typical Applications of Optolite Shielded Windows

- *Aerospace and Defence*
- *Radio and telecommunication*
- *Industrial Manufacturing Equipment*
- *Medical and Scientific Apparatus*
- *Information Technology Equipment*
- *Flat Panel Displays in Electronic Equipment*

MANUFACTURERS OF OPTOLITE CONTRAST ENHANCEMENT FILTERS  
SHIELDED WINDOWS – INSTRUMENT GLASSES  
POLARISING FILTERS

## Properties

### Shielding

Absorption of electromagnetic energy is mainly dependant on the mesh conductivity, wire diameter, weave density, electrical contact between intersecting wires, mesh material and edge terminations.

The shield effectiveness, measured by using the "Hole-in-the-Wall" technique, is typically between 60dB and 70dB from 100KHz to 1GHz for blackened stainless steel meshes.

### Optical Characteristics

It is important to colour match band pass filters to the particular display characteristics. Optolite™ transmission, absorption and reflectance are dependant on the filter band pass colour, mesh density and non glare finish. Also, by casting the material as a one piece filter, the transmission is improved by reducing the number of internal reflecting surfaces from four to two compared to laminated windows.

### Physical Design

Optolite shielded windows are supplied fabricated to customer requirements. Overall standard thicknesses are 2.5, 3, 4, 6mm. Other, non-standard thicknesses, from 1mm upwards, are also available to order together with an optional non glare finish.

### Weight

For larger displays, weight can be an extremely important consideration in the design of shielded filters. Optolite™ Clear HSR and Optolite coloured acrylic filters weigh only half as much as glass. Additionally, an acrylic filter is up to five times as resistant to breakage as a comparable glass filter.

### Mesh

Various types of mesh are offered which can be treated to produce a matt black non reflective finish. Alternatively, a standard metallic finish can be incorporated in band pass filters where the colour reduces the need for blackened mesh. Typically, the wire diameters range from .025mm to 0.5mm and the weave densities vary from 50 O.P.I. (Opening per inch) to 200 O.P.I. mesh. The mesh can be set at any angle up to 45° in more demanding applications to restrict the possibility of moiré fringes where this is important.

### Edge Termination

In one piece filters, the conductive mesh is exposed along the edge of the Optolite™ filter after it is cut to size. A silver conductive bussbar is added to the edge and then extended, if required, to the front or rear surface.

The conductive circuit from the mesh is then completed either through the bussbar or else via a conductive elastomer gasket attached to the bussbar. Other edge termination methods are also available.

### Gasket

The conductive gasket consists typically of aluminium or monel wires, which are crimped for maximum pressure. The wires are oriented perpendicular to the mating surfaces and integrally bonded into a silicone elastomer. The elastomer acts either as an environmental seal or as a pressure seal. Again, other types of gaskets are also available.

Instrument Plastics Ltd will be pleased to advise on the design and construction of Optolite™ shielded windows for specific applications.

*Instrument Plastics Limited has a policy of continual improvement of products and so reserves the right to change the product specification without notice.*