

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

Optolite™ Advanced RFI/EMI Shielded Lamination Assemblies

Instrument Plastics introduces a new range of Optolite™ Advanced RFI/EMI Lamination assemblies providing customers with the ability to construct complex display features with enhanced capabilities in Optical Sun Light Readability, Touch Technologies, High RFI environment shielding, Transparent Heaters and LCD TFT edge or optical bonding technologies.

The display stack may be customised to suit existing product construction or custom built to new designs with the inclusion of as many interlayers as necessary to meet the design criteria.

With In house capabilities to construct and supply ready built assemblies with silk Screen Printing and RFI / Environmental seals the customer is supplied with a ready to assemble display stack.

Front Assembly Lamination

Fully laminated window options are available in :- **Glass, Polycarbonate, Acrylic, Optolite HSR, Polarising Filter, Privacy Filter**

Typical Glass types;

Non-Reflective (Non Glare), A non-glare etched surface – a good cost effective solution.

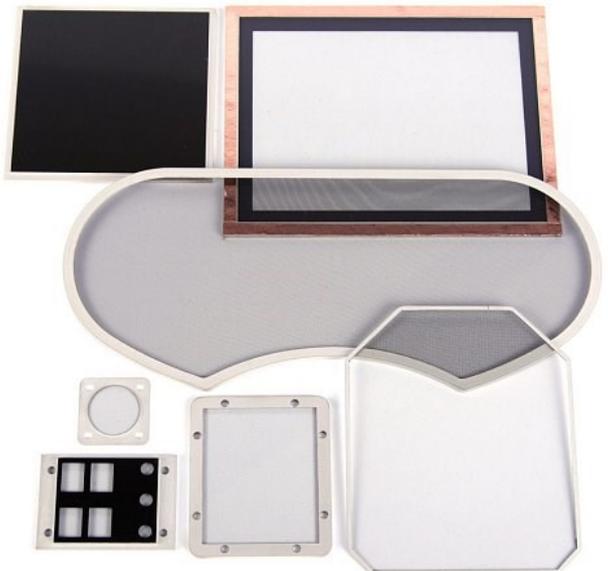
Anti-Reflective (MLAR) Coatings, Reducing the reflectance of plain gloss by 9 times., Recommended for sunlight readability applications.

EMI ITO Coated Glass, Highly visible light transmission, ideal EMC/RFI shielding when lower shielding levels are required, also constructed into Transparent Heater

Polycarbonate, Offers high impact strength with excellent flammability ratings. Available with non-glare and anti-reflective coatings, EMC/RFI shielded mesh and coloured interlayers.

Polarisers: Linear , Circular, Retarders.

A selection of Linear, Circular and retarders may be added to the assembly stack as a interlayer to improve the contrast ratio of resistive Touch screens in Aerospace, Marine and sunlight readable displays requiring additional Optical qualities.



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

For further information contact Tim Butterly or Rad Fismistr.
Tim@instrumentplastics.co.uk, Rad@instrumentplastics.co.uk or Sales@instrumentplastics.co.uk

TEL: +44 (0) 1628 770018 FAX: +44 (0) 1628 773299

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

Optolite™ Advanced RFI/EMI Shielded Lamination Assemblies

Typical Glass types;

Optolite HSR

Optolite Clear HSR (High Scratch Resistant) has both outstanding abrasion resistance, up to 20 times that of acrylics, and excellent impact resistance. It is also chemical resistant, being immune to the effects of virtually all common solvents. It is lightweight, approximately half that of glass, and exhibits optical properties comparable to crown glass. Its maximum continuous operating temperature is in excess of 100°C.

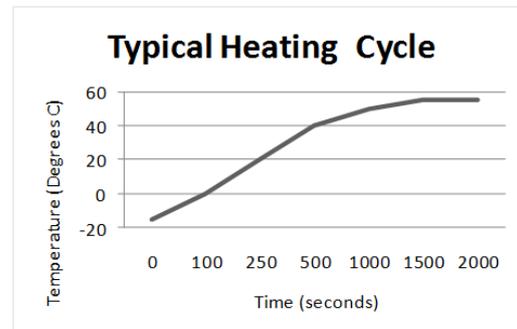
Supplied in Clear Gloss & Non Glare finishes.

Transparent Heaters;

Providing a fast and uniform temperature control our ITO heaters may be constructed as single or multi layer laminations to protect against misting, frosting and fogging of windows, including advanced RFI designs and graphical artwork to provide custom solutions.

Product Specifications

Size max	400 x 500 mm
Thickness single layer	1.1 mm
Multi layer	> 2.6mm
Transmittance (550nm)	> 85%
Wire gauge (PTFE)	26 AWG
Wire Length	200 mm
Temperature range	-40 to +70 degrees C
Typical Resistance	4-15 Ohms/sq inch



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

For further information contact Tim Butterly or Rad Fismistr.
Tim@instrumentplastics.co.uk, Rad@instrumentplastics.co.uk or Sales@instrumentplastics.co.uk

TEL: +44 (0) 1628 770018 FAX: +44 (0) 1628 773299

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

Optolite™ Advanced RFI/EMI Shielded Lamination Assemblies

Touch Screens/Sensor foils;

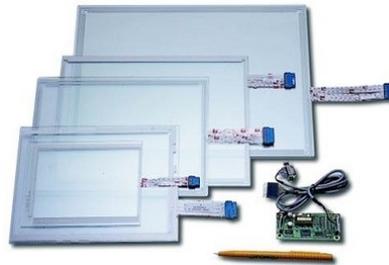
Resistive Touch

A fully laminated touch screen consists of a touch screen with a strengthened glass front which provides scratch resistance while the functionality of the touch screen is not impacted. At Instrument plastics we can provide a laminated screen with drastically increased integral strength and unimpaired optical clarity.

Each laminated touch screen is hand assembled in clean room conditions. This is to ensure consistent high quality due to the demanding applications for which the laminated touch screens may be used. Overall with added durability and impact resistance our laminated touch screens can be used in a variety of military, aviation, medical and industrial applications.

At instrument plastics all major touch screens can be laminated, this includes –

- 4 wire resistive
- 7/8 wire resistive
- 5/6 wire resistive
- Surface acoustic wave
- Infrared
- Infrared shadow
- Surface Capacitive



Projective Capacitive

We are also happy to advise customers on what Touch screen would best suit their requirements due to the numerous types of touch screen available.

Projected capacitive touch technology where the sensor is behind the front panel of the unit. **Surface** capacitive technology, particularly for large displays has been available for many years but suffers from the need for constant recalibration and is also very expensive.

Projected capacitive touch is rapidly replacing other touchscreen technologies such as resistive in the small and medium size touchscreen areas due to its intrinsic advantages.

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

For further information contact Tim Butterly or Rad Fismistr.
Tim@instrumentplastics.co.uk, Rad@instrumentplastics.co.uk or Sales@instrumentplastics.co.uk

TEL: +44 (0) 1628 770018 FAX: +44 (0) 1628 773299

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

Optolite™ Advanced RFI/EMI Shielded Lamination Assemblies

RFI/EMI 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 and 35dB up to 10GHz for blackened stainless steel meshes or higher for double mesh construction.

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.

RFI/EMI 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 OPI (Opening per inch) to 200 OPI 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.

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

For further information contact Tim Butterly or Rad Fismistr.
Tim@instrumentplastics.co.uk, Rad@instrumentplastics.co.uk or Sales@instrumentplastics.co.uk

TEL: +44 (0) 1628 770018 FAX: +44 (0) 1628 773299

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

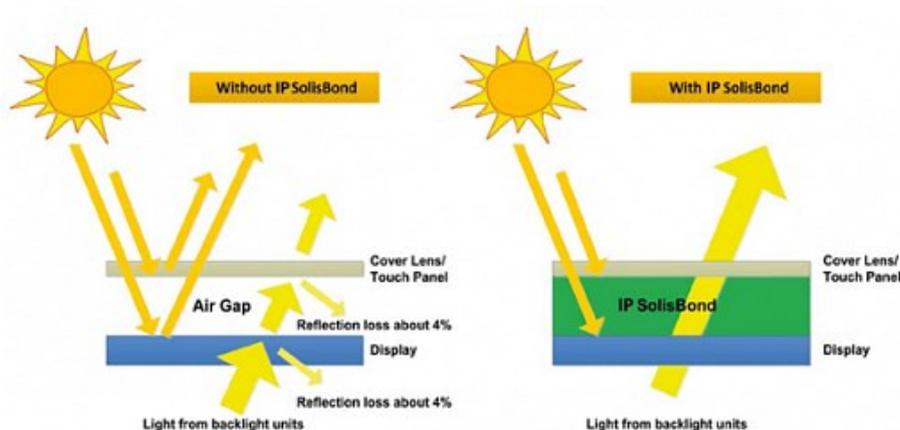
Optolite™ Advanced RFI/EMI Shielded Lamination Assemblies

Optical Bonding

Instrument Plastics Optical Bonding service can be incorporated into a variety of optical displays, cover lens's and touch screens. The IP Solisbond process provides an innovative engineered solution whilst our newclass10,000 clean room bonding facility ensures unparalleled quality. With our extensive knowledge Instrument plastics can assist you throughout the process from initial design and material selection to final production. We can also assist you in choosing suitable touch screens and other optical display configurations.

Key Benefits

- Improved Sunlight Readability: Decreases reflection on the display glass from external light source, hence improves the contrast ratio.
- Shock-resistant: Adhesive is soft and not brittle
- Re-workable process: High yield:1%~5% yield loss of display,1%yield loss of cover lens and touch panel
- Improved Luminance: Reduces light loss from backlight units which increases luminance for about 8%
- Straight forward process: No UV curing required
- Green process and material
- **Does not suffer from the UV effects**, so it doesn't become brittle or yellow when exposed to direct sunlight
- IP Solisbond can withstand temperature ranges between -40C to +200C



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

For further information contact Tim Butterly or Rad Fismistr.
Tim@instrumentplastics.co.uk, Rad@instrumentplastics.co.uk or Sales@instrumentplastics.co.uk

TEL: +44 (0) 1628 770018 FAX: +44 (0) 1628 773299

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

Optolite™ Advanced RFI/EMI Shielded Lamination Assemblies

Edge Bonding

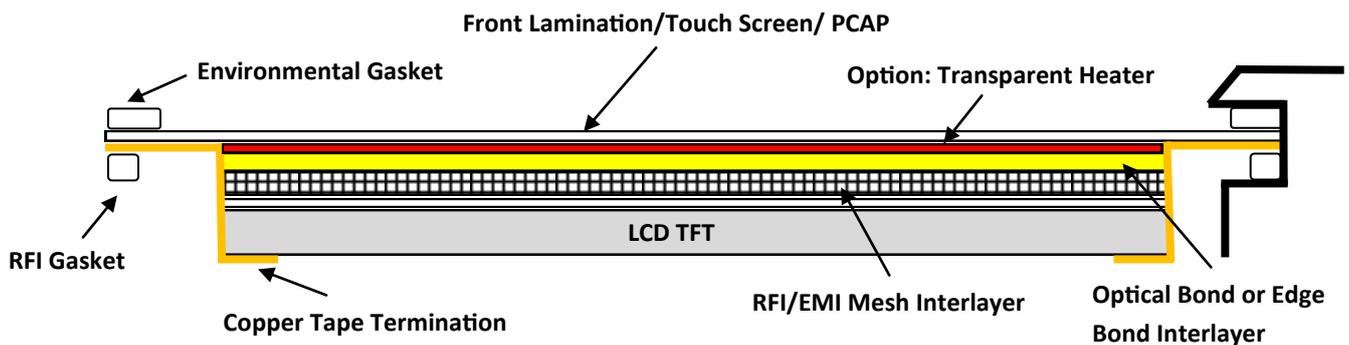
Edge Bonding is a cost effective method of connecting LCD to the interlayer assemblies or front lamination and an alternative to full Optical Bonding, we are able to Edge Bond to free issued Touch Screens, LCD or Interlayer laminations.

RFI & Environmental Gaskets

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 and custom designed. Instrument Plastics supplied a complete assembly ready for installation.

Termination Methods

Termination of the interlayer RFI Mesh to the outer assembly is dependant on overall design and is generally custom design to suit the specific application and will form part of the completed assembly design.



Typical Advanced RFI/EMI Lamination assembly with option of Heater

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

For further information contact Tim Butterly or Rad Fismistr.
Tim@instrumentplastics.co.uk, Rad@instrumentplastics.co.uk or Sales@instrumentplastics.co.uk

TEL: +44 (0) 1628 770018 FAX: +44 (0) 1628 773299

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

Optolite™ Advanced RFI/EMI Shielded Lamination Assemblies

Instrument plastics can also incorporate into touch screens /LCD Laminations;

- **EMI Shielding**
- **Colour /tinted windows**
- **Privacy windows**
- **Circular Polarisation for improved sunlight readability.**
- **Printing on the glass**
- **Gaskets**
- **Transparent heater**
- **Chemically strengthened laminated glass**

Other applications;

- **Anti-vandal touch screens**
- **Polycarbonate toughened screens for medical and food processing manufacturers.**

Anti Vandal resistance lamination;

Overall Instrument plastics can supply touch screens for a variety of applications where durability and wide ranging temperature stability are paramount.

Call Instrument plastic and discuss in technical detail how we can construct a Advanced RFI/EMI Laminated Assembly to meet your designs, get advise on Touch Technologies and the best solution to meet your design criteria. We produce assemblies from single sample evaluation design models to high volume production within our facility in the UK.

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

For further information contact Tim Butterly or Rad Fismistr.
Tim@instrumentplastics.co.uk, Rad@instrumentplastics.co.uk or Sales@instrumentplastics.co.uk

TEL: +44 (0) 1628 770018 FAX: +44 (0) 1628 773299