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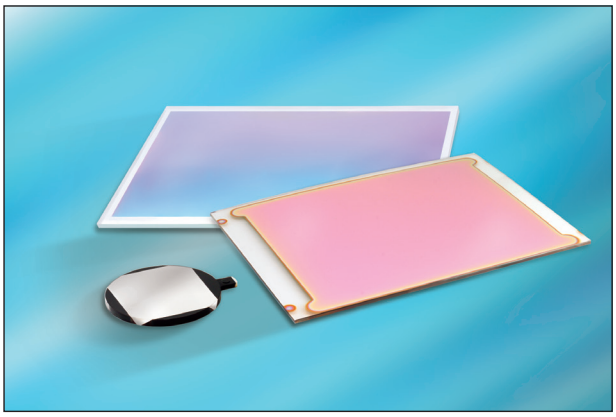
DSI® Deposition Sciences INCORPORATED

Bringing Technology to Light™



TECHNICAL DATA SHEET

Precision Thin Film Filters On Engineered Plastics

PRODUCT DESCRIPTION

DSI has introduced the capability of manufacturing durable coatings on a group of engineered plastics. The use of plastic as an optical material adds a great deal of flexibility for the optics designer as well as the potential for cost reductions in the system. Plastic optics can be molded with mounting features as part of the optic, reducing the need for intricate mounting schemes in the optical system. Small parts can be molded in a web with multiple parts contained in a single unit. This reduces handling in the coating process which leads to cost savings and reduces the possibility of loss in the coating operation.

Using our patented MicroDyn® sputtering technology DSI specializes in non-absorbing, extremely durable and complex thin films on plastic optics. DSI's coating capabilities on plastic optics include single band, multi–band and wide band multi-layer anti-refection coatings, metal mirrors, dielectric mirrors, band pass filters, long wave pass filters, short wave pass filters, and beam splitters. With our production MicroDyn® sputtering chamber DSI can coat optics up to 19" X 22".

ENGINEERED PLASTIC CANDIDATES

- Ultem
- Zeonex
- Polycarbonate

APPLICATIONS

- Medical Optics
- Unmanned Vehicle Sensors Suites
- Telecommunications
- Smart Weapons
- CPV Solar Systems
- Analytical Systems
- Weathering Systems
- LED Lighting Systems

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TECHNICAL SPECIFICATIONS

When developing an optical system with plastic optics which requires coating, several variables must be considered including:

- Spectral requirements for the coatings being deposited
- Feature size required on the finished optic
- Maximum operating temperature of the optic
- Stress in the thin film
- Mechanical strength of the optic

Prior to choosing a plastic to be coated in an optical system there are several parameters that need to be considered. As a general rule the higher the glass transformation temperature of the plastic the better for the coating operation. If the system will require complex thin films, very high reflection, or long wavelength operation, this will require a longer time in the coating chamber. This extended period in the coating chamber may result in a higher temperature at the end of the coating run. Plastics do not have the same rigidity as glass. Optical thin films can have a significant amount of intrinsic stress. This intrinsic stress must be considered during initial system design. DSI has developed processes to minimize the stress in a thin film; however some engineering development effort may be required to minimize stress within the film.

Selected Coatings Deposited onto Engineered Plastics by DSI

Coating	Nominal Specification
NIR Band Pass	FWHM 50 nm @ 1047 nmt
3.5 µm to 5.0 µm High Reflector	R 96% Average 3.5 µm - 5 µm
Visible Anti-Reflection	R 0.15% @ 670 nm
Front to Back Alignment	+ 10 µm
Front Silver Surface	R 95% Average 380 nm - 1700 nm
Enhanced Aluminum @ 365 nm	R 85% @ 365 nm

The above examples are not an all inclusive list of DSI's capabilities.
Please contact DSI with your specific application at solutions@depsci.com

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