DSI • DEPOSITION SCIENCES, INC.

A LOCKHEED MARTIN COMPANY

ABSORPTION COATINGS

Technical Data Sheet

PRODUCT DESCRIPTION

Absorption coatings, sometimes referred to as Dark Mirrors, absorb incident light rather than reflecting or transmitting it. They exhibit both the low transmittance of a metal and the low reflectance of an antireflection coating. DSI absorption coatings are distinguished by their broadband spectral performance and exceptional environmental durability. They can be designed for use in wavelength regions from the visible through the longwave infrared. In addition, DSI's photolithography capability enables the production of dark mirrors in precise patterns ranging from circular to more complex geometries.

APPLICATION

Absorption coatings are typically used to define the aperture of an optical system where control of stray light or elimination of crosstalk is critical. Applications include:

- High-performance imaging
- Focal plane array assemblies
- Multispectral sensors

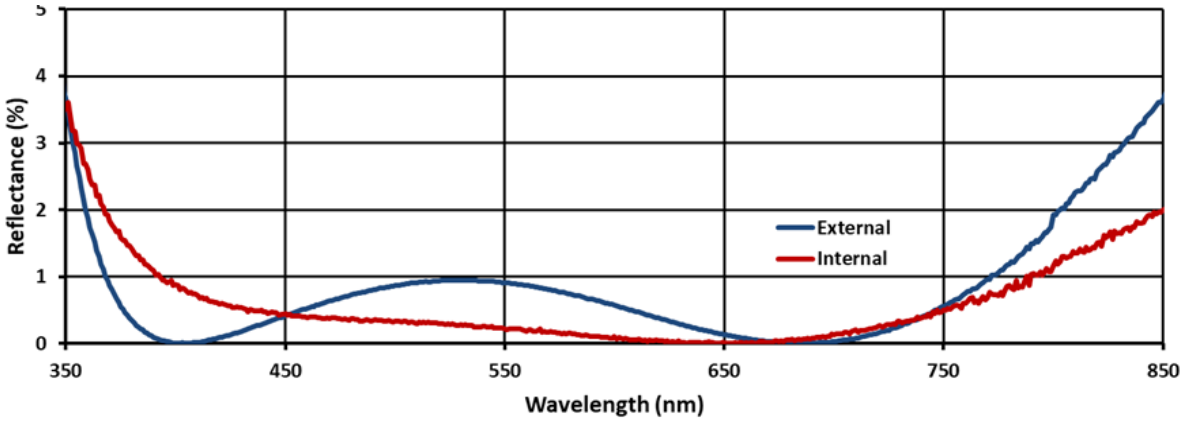
TECHNICAL SPECIFICATIONS

DSI's absorption coatings can be applied to virtually any substrate, in sizes up to 200mm diameter.

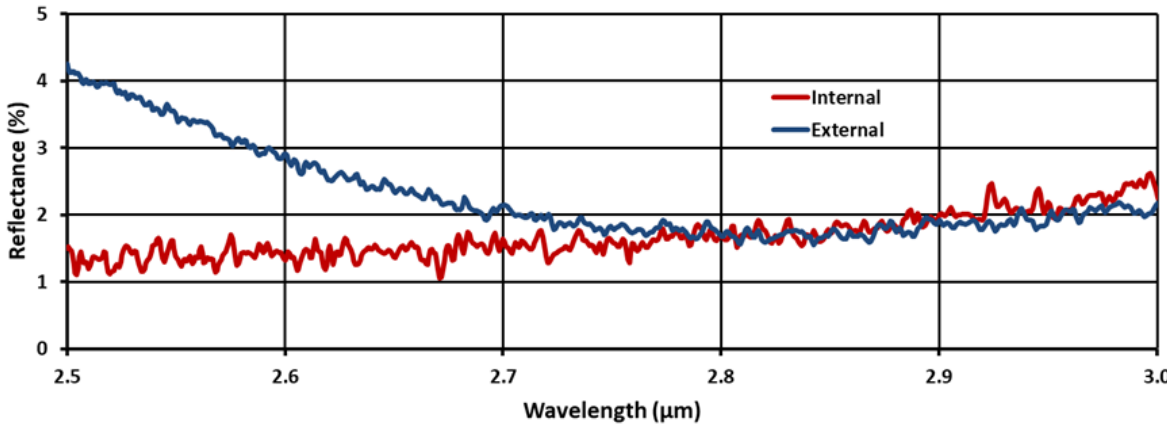
- Absorption coatings can be designed for low reflectance from the front of the optic (external), low reflectance at the substrate surface (internal), or low reflectance from either direction (bidirectional).
- Reflectance is often specified at less than 5%; but is generally held to much lower values. Achievable levels are highly dependent on the angle of incidence range as well as the wavelength range.
- Typical transmittance specifications range from < 1% to < 0.01%. Furthermore, since the coatings contain one or more metal layers, very high blocking levels are attainable over broad wavelength ranges.
- Using photolithography, DSI can produce absorption coatings with feature sizes as small as 20µm, and with ±5µm placement accuracy.
- DSI's absorption coatings pass the MIL-STD environmental tests of adhesion, humidity, and moderate abrasion.

TYPICAL MEASURED PERFORMANCE

Bidirectional VIS/NIR Absorption Coating on Borofloat, T < 0.02%



Bidirectional SWIR Absorption Coating on Sapphire, T < 0.1%



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