

Spectrafect® 97% Diffuse Reflectance Coating

Cost-effective, highly reflective coating for any substrate



Versatile

Labsphere's Spectrafect coating is a proprietary, high-reflectance coating that is useful over a wide wavelength range. This inexpensive, non-toxic material is near-Lambertian in character and easily applied by spray to any substrate. Spray coating allows for faster prototyping and ensures that the final design is not limited by the application process. Labsphere is equipped with an in-house coating facility and is also able to perform on-site coating for very large or complex custom projects.

Spectrafect is applied by spraying the coating onto a specially prepared surface that generally consists of degreasing followed by sandblasting to roughen the surface. Spectrafect coating can be applied to virtually any substrate, and is an ideal reflectance coating for items such as optical components, integrating spheres, lamp housings and spectral diffuser panels. Because it is water soluble, Spectrafect should be cleaned with an air power sprayer. It can easily be re-coated to counteract wear and tear.

Stable

Spectrafect is a specially formulated barium sulfate coating which produces a nearly perfect diffuse reflectance surface. Spectrafect is generally used as a reflectance coating in the UV-VIS-NIR region. Its useful wavelength range is 350 to 2400 nm. The reflectance of Spectrafect, as with all reflectance coatings, is dependent on the thickness of the coating. At thicknesses above 0.5 mm (0.020 inches), the coating is opaque with reflectance of >96% over the wavelength range from 400 to 1000 nm. Spectrafect is thermally stable to approximately 100°C.

Labsphere has tested Spectrafect for laser damage threshold using a Q-switched YAG laser at 532 nm, and determined the damage threshold to be 1.7 J/cm².

This datasheet applies to Spectrafect and not to Labsphere's 6080 White Reflectance Coating. Spectrafect is achieved by the combination of proprietary materials and a proprietary coating process and is not for sale other than on Labsphere's products and customer products coated at Labsphere.

Value

- High reflectance
- Highly Lambertian
- Optically stable
- Non-toxic

Applications

- UV-VIS-NIR applications
- Optical components
- Integrating spheres
- Lamp housings

Specifications

Performance

Reflectivity: @600 nm 97 - 98%
 Useful Spectral Range: 350 to 2400 nm
 Thermal Stability: to 100°C
 Laser Damage Threshold: 1.7 J/cm²

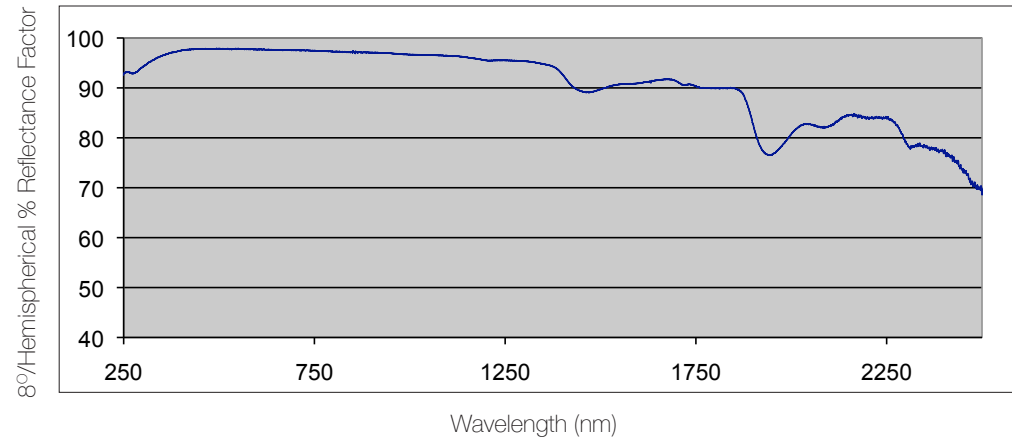
Typical Minimum Reflectance Values

Wavelength (nm)	% Reflectance
1000	96.0
900	96.2
800	96.3
700	96.8
600	97.2
500	97.4
400	97.1

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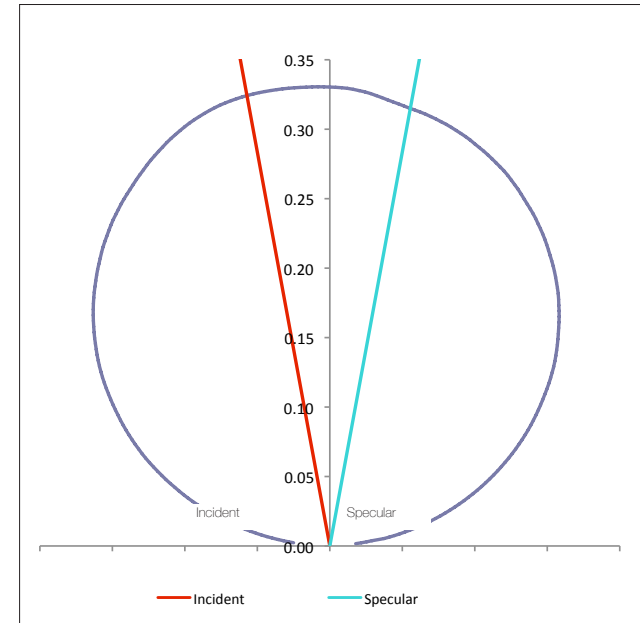
Percent Reflectance vs. Wavelength of Spectrafect



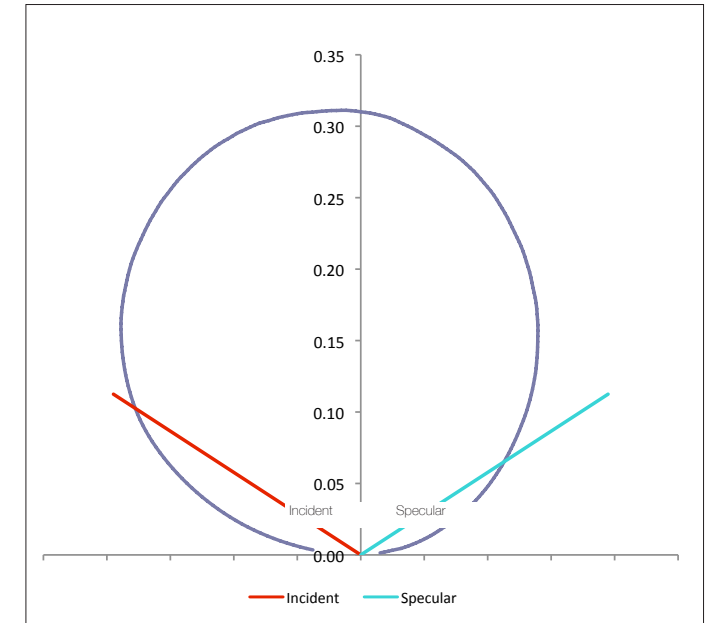
BRDF of Spectrafect at 488 nm, 10° and 60° Illumination Angle

BRDF (bidirectional reflectance distribution function) is a function that defines how light is reflected from an opaque surface. It provides a representation of a material's light diffusing properties. The higher the reflectance and diffusivity, the more Lambertian the material appears. The near Lambertian properties of Spectrafect are unmatched and ideal for integrating sphere applications where spatial uniformity is crucial to the application, such as integrating sphere photometry, uniform spectral radiance, and spectroscopy.

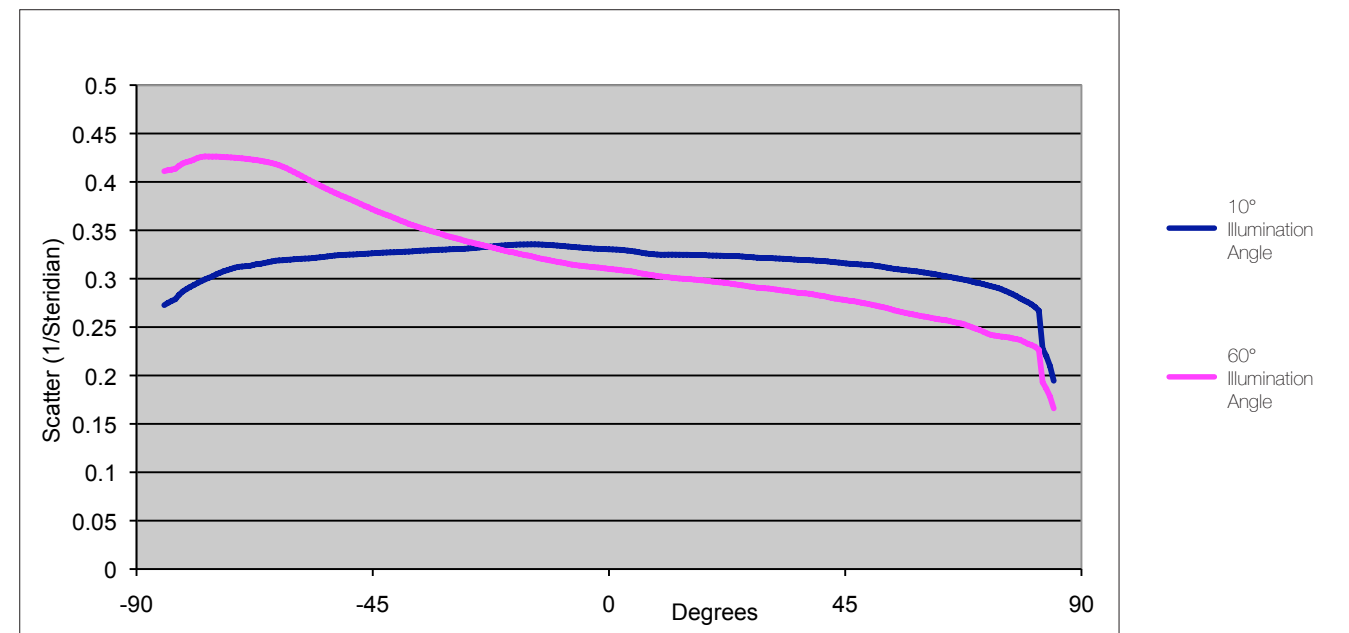
Typical Polar Intensity (CCBRDF) Plot, Spectrafect 488 nm, in-plane, 10°



Typical Polar Intensity (CCBRDF) Plot, Spectrafect 488 nm, in-plane, 60°



Typical BRDF of Spectrafect at 488 nm in-plane, 10° and 60° Illumination Angle



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