Spectraflect® 97% Diffuse Reflectance Coating

Cost-effective, highly reflective coating for any substrate

Versatile
Labsphere’s Spectraflect 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.

Spectraflect is applied by spraying the coating onto a specially prepared surface that generally consists of degreasing followed by sandblasting to roughen the surface. Spectraflect 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, Spectraflect should be cleaned with an air power sprayer. It can easily be re-coated to counteract wear and tear.

Stable
Spectraflect is a specially formulated barium sulfate coating which produces a nearly perfect diffuse reflectance surface. Spectraflect 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 Spectraflect, 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. Spectraflect is thermally stable to approximately 100°C.

Labsphere has tested Spectraflect 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 Spectraflect and not to Labsphere’s 6080 White Reflectance Coating. Spectraflect 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

<table>
<thead>
<tr>
<th>Wavelength (nm)</th>
<th>% Reflectance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>96.0</td>
</tr>
<tr>
<td>900</td>
<td>96.2</td>
</tr>
<tr>
<td>800</td>
<td>96.3</td>
</tr>
<tr>
<td>700</td>
<td>96.8</td>
</tr>
<tr>
<td>600</td>
<td>97.2</td>
</tr>
<tr>
<td>500</td>
<td>97.4</td>
</tr>
<tr>
<td>400</td>
<td>97.1</td>
</tr>
</tbody>
</table>

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BRDF of Spectraflect 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 Spectraflect 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, Spectraflect 488 nm, in-plane, 10°

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

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

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