

# Optical-grade Spectralon<sup>®</sup> Reflectance Material

Diffuse reflectance material specially fabricated for optical components



## Durable

Labsphere's Spectralon Reflectance Material can be machined into a wide variety of shapes for the construction of optical components. The material has a hardness roughly equal to that of high-density polyethylene and is thermally stable to >400 °C.

Spectralon Reflectance Material gives the highest diffuse reflectance of any known material or coating over the UV-VIS-NIR region of the spectrum.

In-house machining allows samples to be created quickly and easily, and modified throughout the design, prototyping and testing process. This manufacturing flexibility means low or high volume quantities can be ordered. Labsphere's engineering staff has an established industry-wide reputation for its knowledge and experience in laser pump chamber design, and often collaborates with customers to develop custom Spectralon designs.

## Quality

The surface and immediate subsurface of Labsphere's Spectralon exhibits highly Lambertian behavior. The porous network produces multiple reflections in the first few tenths of a millimeter of Spectralon.

The use of Labsphere's Spectralon should be limited to the UV-VIS-NIR. Spectralon exhibits absorbencies at 2800 nm, then absorbs strongly (>20% reflectance) from 5.4 to 8 mm.

Spectralon exhibits relatively flat spectral distribution over most of the UV-VIS-NIR from 250 to 2000 nm. These spectral properties exceed those of most paints, which show strong absorbencies in the UV due to absorbencies by TiO<sub>2</sub> or similar pigments. The hydrophobic nature of Spectralon also leads to exclusion of water overtone bands in the NIR which may occur in barium-sulfate-based materials. The open structure of Spectralon causes both reflectance and transmittance, but not absorbance of light.

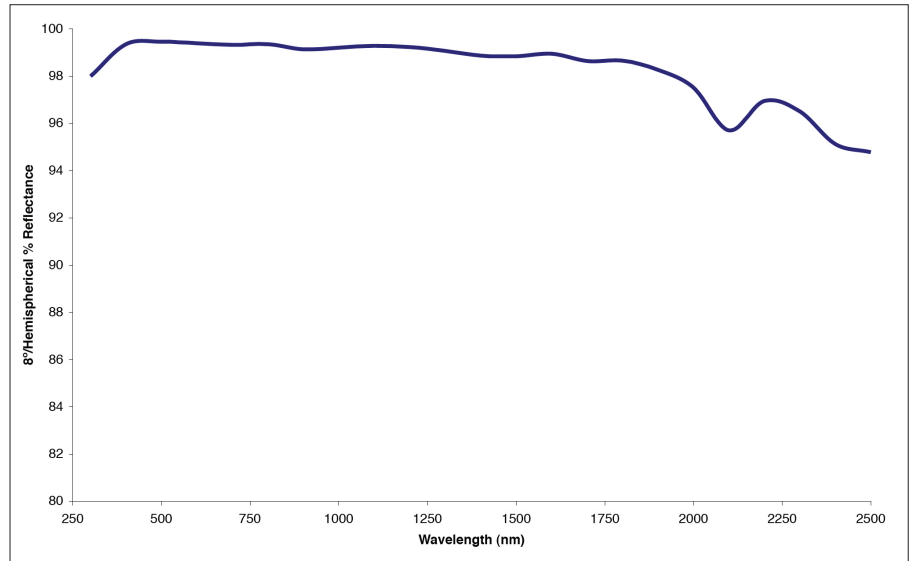
## Value

- >99% Diffuse reflectance
- Extremely Lambertian
- Chemically inert
- Thermally stable
- Environmentally stable
- NIST traceable calibration

## Applications

- Optical components
- Densitometer standards
- Remote sensing targets

## Typical 8° Hemispherical Reflectance SRM-990



## Specifications

### Property

Property	ASTM Test	Value
Water Permeability:	D-570	<0.001% (hydrophobic)
Hardness:	D-785	20 - 30 Shore D
Thermal Stability:		Decomposes at >400 °C
Coefficient of Linear Expansion:	D-696	$5.5 - 6.5 \times 10^{-5}$ in/in °F <sup>-1</sup> , or $9.9 - 11.7 \times 10^{-5}$ in/in °C <sup>-1</sup>
Flammability:		Non-Flammable (UL rating V - 0)
Yield Stress:	D-638	208 psi
Volume Resistivity:		>10 <sup>18</sup> Ω/cm
Dielectric Strength:		18 V/μm

## Typical Reflectance Values for Optical-grade Spectralon

Wavelength Range (nm)	8° Hemispherical Spectral Reflectance Factor
250	0.925
300	0.925
350	0.975 - 0.995
500 - 700	0.985 - 0.995
750 - 1600	0.975 - 0.995
1650 - 2500	0.925

## Outgas Test (ASTM E-595)

Total Mass Loss: (TMC)	0.00%
Collected Volatile Condensable Material: (CVCM)	0.03%
Water Vapor Recovered: (WVR)	0.00%

For helpful information regarding designing parts from Spectralon, please refer to Spectralon Design Guidelines.

