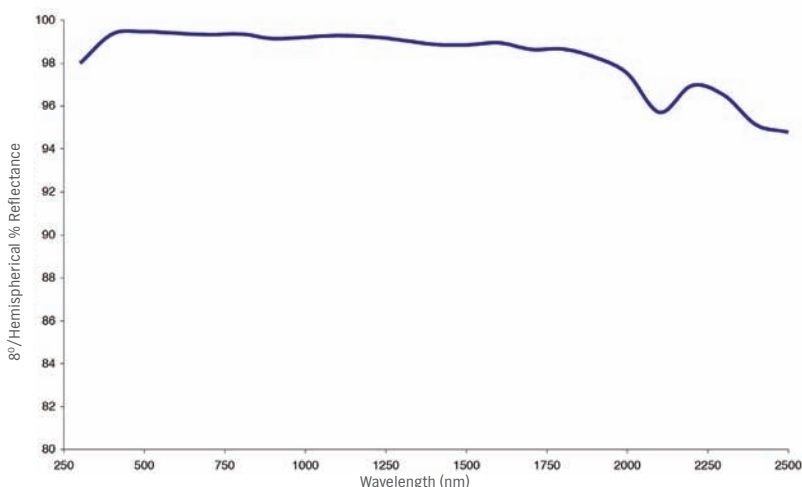


# OPTICAL-GRADE SPECTRALON MATERIAL

Diffuse reflectance material specially fabricated for optical components

TYPICAL 8° HEMISPHERICAL REFLECTANCE SRM-990



## DURABLE

Labsphere's Spectralon® reflectance material is a thermoplastic resin that 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 >350°C.

Spectralon reflectance material gives the highest diffuse reflectance of any known material or coating over the UV-VIS-NIR region of the spectrum. The reflectance is generally >99% over a range from 400 to 1500 nm and >95% from 250 to 2500 nm. The material is also highly Lambertian at wavelengths from 0.257 μm to 10.6 μm, although the material exhibits much lower reflectance at 10.6 μm due to absorbance by the resin.

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 without affecting price. Labsphere's engineering staff has an established industry-wide reputation for its knowledge and experience in laser cavity design, and often collaborates with customers to develop custom Spectralon designs.

## FEATURES:

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

## BEST FOR:

- Optical Components
- Denisometer Standards
- Remote Sensing Targets

## QUALITY

The surface and immediate subsurface of Labsphere's Spectralon exhibits highly Lambertian behavior. The porous network of thermoplastic 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 μm.

Spectralon exhibits relatively flat spectral distribution over most of the UV-VIS-NIR from 250 to 2500 nm, Spectralon exhibits a reflectance variance of <5% between 360 - 740 nm (VIS) the variance in reflectance is <0.5%. 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.



# Specifications

Property	ATSM Test	Value
Density:		1.25 -1.5 g/cm <sup>3</sup>
Water Permeability:	D-570	<0.001% (hydrophoric)
Hardness:	D-785	20 - 30 Shore D
Thermal Stability:		Decomposes at >400°C
Coefficient of Linear Expansion:	D-696	5.5 - 6.5 x 10 <sup>-5</sup> in/in - °F; 10 <sup>-4</sup> C <sup>-1</sup>
Vacuum Stability:		No outgassing except for entrained air
Flammability:		Non-Flammable (UL rating V - 0) Incompatible with non-polar solvents, greases
Yield Stress:	D-638	208 psi
Volume Resistivity		>10 <sup>18</sup> Ω/cm
Dielectric Strength		18 V/μm