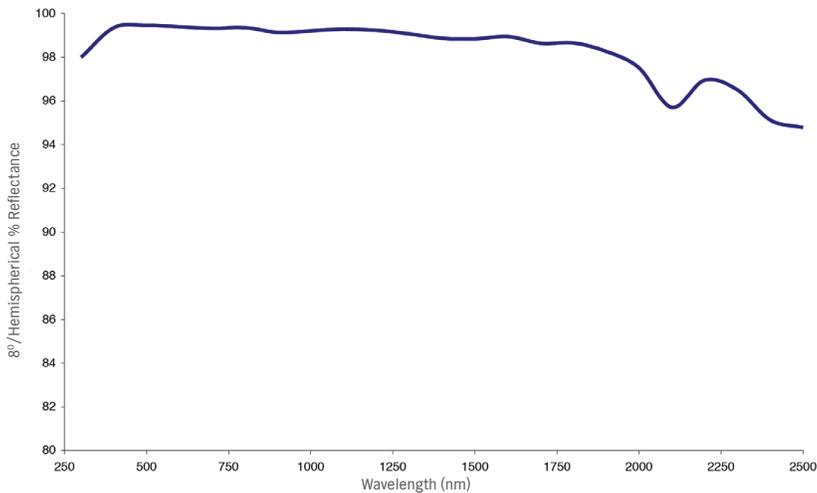


# LASER-GRADE SPECTRALON MATERIAL

## Diffuse reflectance material machined for laser applications

TYPICAL 8° HEMISPHERICAL REFLECTANCE - SRM-990



### COMPLETELY CUSTOMIZABLE

Labsphere's laser-grade Spectralon® material is a highly Lambertian, thermoplastic resin material that can be machined into a wide variety of shapes. Laser-grade Spectralon combines extremely high reflectance with near perfect diffuse scattering properties to yield uniform pumping of the laser medium. The thermal properties of laser-grade Spectralon results in an output beam that is very uniform and free from thermal distortion and the material is suitable to prolonged exposure to high-intensity arc lamp radiation.

### ECONOMICAL

Unlike expensive and intricate molded reflectors, Labsphere's machined Spectralon can be economically fabricated into a wide variety of shapes to meet any reflector design. 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.

### FEATURES:

- Machinable
- Durable
- Highly Lambertian

### BEST FOR:

- Medical laser systems
- Laser range finder systems
- Dental laser systems
- Industrial lasers systems

### ACCURATE

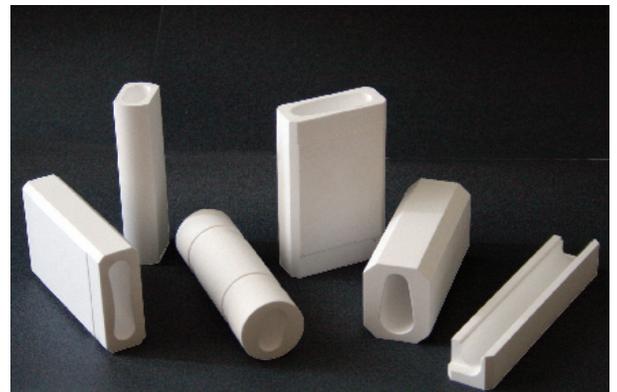
Labsphere's laser-grade Spectralon has undergone stringent testing with regards to long-term reliability when exposed to flashlamp radiation. The material has been subjected to over a million shots at any average pump energy of 225 Watts with no sign of degradation.<sup>1</sup>

Spectralon's greater than 99 percent reflectance and near-Lambertian diffuseness deliver more watts per square meter with greater beam stability and uniformity. This more predictable beam profile has reduced susceptibility to parasitic oscillations compared to metal, ceramic, or powder-based reflectors. Spectralon's long-term optical stability ensures consistent and reliable laser performance over time.

### RELIABLE

Labsphere's dedicated manufacturing and machining facility ensures cleanliness and high quality in Labsphere's Spectralon laser cavity fabrication process.

Labsphere's staff has an established industry-wide reputation for its knowledge and experience in laser cavity design, and often collaborates with customers to develop custom laser pump reflector designs. Labsphere engineers and applications specialists will work closely with you to determine special cooling requirements and coupling geometries resulting in peak performance at an affordable price.

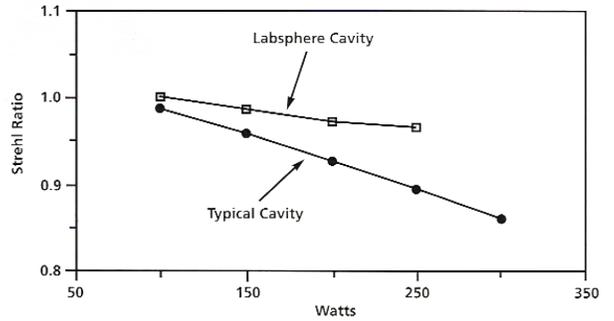


<sup>1</sup>Rockafellow, D., 1989, Pumped Cavity Test Report: prepared by Big Sky Laser Corp.

# Laser-Grade Spectralon® Performance Data

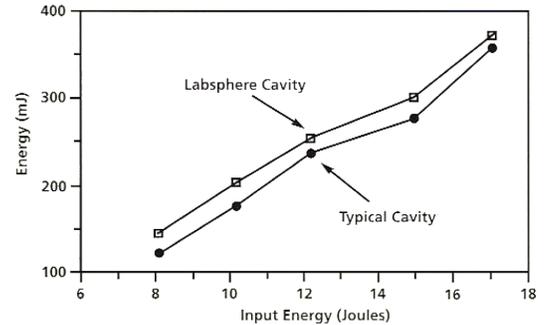
## Strehl Ratio vs. Input Power (watts)

The Strehl ratio for a perfect optic is 1,000, but as the input lamp energy increases, distortion invariably takes place and the Strehl ratio falls. As the lamp is flashed, the rod is distorted thermally from the localized heating and nonuniform cooling. Labsphere cavities perform exceptionally well in the measurement, exhibiting very little distortion and demonstrating their uniform pumping characteristics.



## Input vs. Output Energy at 10Hz, 30% Reflector

This plot shows the resonator output energy level per pulse at 10 Hz versus the input energy per pulse into the flashlamp. As the flashlamp is pumped harder the output energy increases. Labsphere cavities exhibit slightly higher efficiencies than typical cavities.



## Focus vs. Input Power

When comparing focus versus input power, Labsphere cavities exhibit better focusing characteristics than typical cavities. Measuring with the same rod and lamp, these cavities absorb more flashlamp light indicating higher efficiencies.

