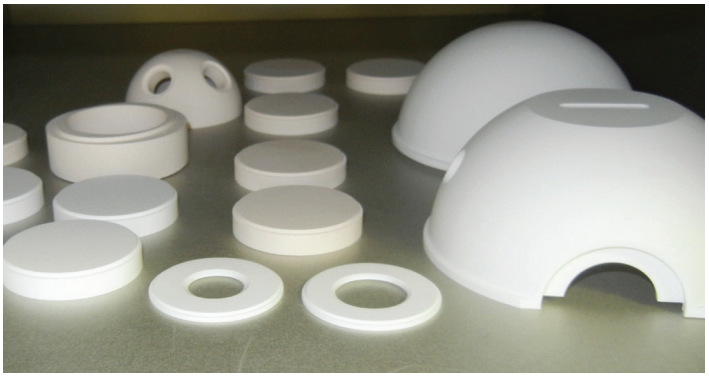
Spectralon® EPV: For extreme physics and vacuum



The world standard in diffuse reflectance materials, Labsphere's Optical Grade Spectralon has been an industry standard material for over twenty-five years and continues to find new niches every day as optical technology continues to expand. A perfectly white and diffuse material with a Lambertian >99% reflector, can be of great benefit to solving radiometric problems. The premier example of this is Labsphere's flagship Space Grade Spectralon. This ultra-purified product is now on orbit in over 20 major optical satellite systems as a fundamental element in the absolute calibration chain for the science of those projects.

In recent years, more and more applications have arisen on the terrestrial scene where not only is there need for a great diffuse reflector, but the material also needs a level of purity driven by energy levels or special environments.

Labsphere has developed a production and handling process that provides a purified output product for ground-based applications. We call this innovation Spectralon EPV (Spectralon for Extreme Physics and Vacuum).

The EPV process and materials are created for long term use in nitrogen, UV, vacuum or other isolated environments. Performance degradation will be observed if the material is subjected to contamination through use of environmental volatiles or with human contact or interaction. EPV performance is susceptible to volatile contaminants that may be present in cleanroom environments.

Applications:

- High energy levels where low contamination will lead to longer product lifetimes
  - Laser pump chambers
  - Fission and fusion reactors (Examples: JET, NIF, PPPL)
  - "Ghosting" material for diffusion of high energy stray light
- Particle accelerators and physics experiments (Examples: CERN, PPPL)
- Medical applications requiring low contamination
- Dark matter detection chambers: low particulate contamination and low radiological background levels
- Vacuum chambers for optical spectroscopy or sensor testing
- High UV (<300 nm) stability
  - UV LED measurement
  - UV water sanitization
  - Deep UV spectroscopy
  - Curing and drying of UV polymers materials
  - 3D printing curing
- Service life prediction – rapid weathering of materials using UV, temperature and humidity
  - Spectralon has the triple benefit of being extremely impervious to each of these items

Order information for Reflectance Standards and Targets

Standard Spectralon® EPV reflectance standards and targets are available as shown.
Labsphere also offers custom Spectralon EPV solutions tailored to application-specific requirements for extreme physics and vacuum environments.

Model Number	Order Number	Description	Calibration Included	Size
SRS-99-010-EPV	AA-01451-000	Standard, 99%	Yes*	1 inch
USRS-99-010-EPV	AA-01451-100	Standard, 99%	No	1 inch
SRS-99-020-EPV	AA-01451-200	Standard, 99%	Yes*	2 inch
USRS-99-020-EPV	AA-01451-300	Standard, 99%	No	2 inch
SRT-99-020-EPV	AA-01451-400	Target, 99%	Yes*	2 inch
USRT-99-020-EPV	AA-01451-500	Target, 99%	No	2 inch
SRT-99-050-EPV	AA-01451-600	Target, 99%	Yes*	5 inch
USRT-99-050-EPV	AA-01451-700	Target, 99%	No	5 inch

*Spectral Reflectance Factor is reported from 250 to 2500 nm.
Labsphere's standards are calibrated in our NVLAP-accredited laboratory, NVLAP Lab Code 200951-0.
All models include nickel-plate aluminum holder and cover.

Parts that are made under the current EPV process should be specified at:

- Not greater than +/-0.010" on any mechanical dimension – applies to parts with <4" dimensions
- Not greater than +/-1° on any mechanical angle – applies to parts with <4" dimensions.
- For longer or larger parts of greater than 4" add +/-0.001" to any dimension for every dimensional inch added to the part.
- For longer or larger parts of greater than 4" add +/-0.1° to any angular dimension for every dimensional inch added to the part.

Our team of experienced engineers and technicians is skilled in designing and manufacturing tailored solutions.
Contact us at Sales@Labsphere.com to discuss your Spectralon EPV application-specific requirements.