

Integrating Sphere Components



Newport's **819C** (4 port spheres) and **819D** (3 port) Series Integrating Spheres are offered in sizes ranging from 2" to 6" in diameter with three different types of diffuse reflectance materials. They are designed to provide greater configuration flexibility, including a robust port frame design, compatible with many attachments and accessories. Newport also carries an extensive list of 819M series accessories compatible with the 819C and 819D spheres, including port plugs, port reducers, port frame reducers, fiber adapters, Newport photodiode detector adapters, sample holders, and base plates.

- New! Gold spheres ideal for mid-IR wavelength applications
- Total collection of light and spatial integration - useful for divergent and non-symmetrical beams
- Measurements insensitive to exact detector positioning
- Signal attenuation, advantageous in measurement of high-power beams
- High reflectance coating avoids direct damage from the first strike of the beam
- Thermally stable
- High UV-VIS-NIR reflectance



INTEGRATING SPHERE COMPONENTS

Sphere Materials

Newport provides three different types of inner-sphere materials to meet various requirements of users: Spectralon™, Spectrafect™, and gold. The Spectrafect™ coating has an effective range from 300 nm to 2400 nm, with reflectivity of >97% at 600 nm. It is a cost effective and adequate for most radiation measurement applications. The unmatched environmental stability and high-performance of the Spectralon™ based spheres are derived from their rugged monolithic thermoplastic material and are superior to coated integrating spheres. In addition, their high damage threshold surface can be cleaned with distilled water. Hydrophobic, chemically inert and thermally stable to 350°C, Spectralon™ Spheres can be used in more demanding environments, including underwater and high or low temperature processes. At the same time, reflectance exceeding 95% from 250–2500 nm, 98% from 310–2100 nm, and 99% from 400–1500 nm make them ideal for even the most demanding measurements from the ultraviolet to the near infrared.

The gold coated spheres are optimized to provide high level of diffuse reflectance from the longer 800 nm to 20 μm (>90% at 800 nm, > 94% at 1550 nm) wavelength range. Its damage threshold is 4 times greater than Spectralon.

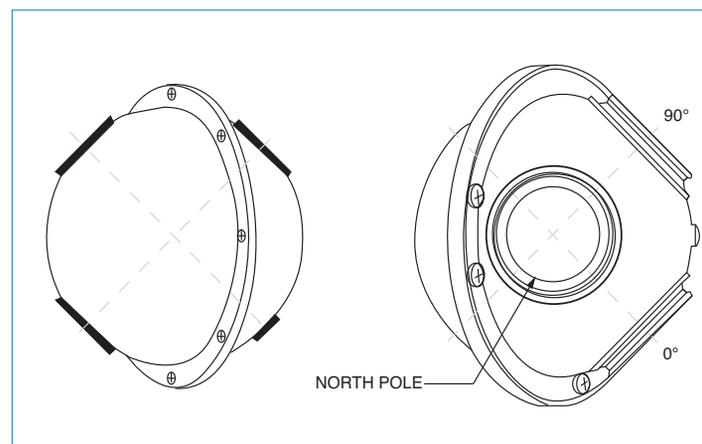
Accessories

Various types of sphere accessories with different types of reflectance materials. Port expanders and reducers change the clear aperture size of a port. A port frame reducer reduces the clear aperture as well, however, an additional accessory can be mounted on the port frame. Port plugs are used to block an unused port. Also available are the detector adapters to mount Newport's 818 and 918D series photodiode detectors, fiber adapters, and base plates.

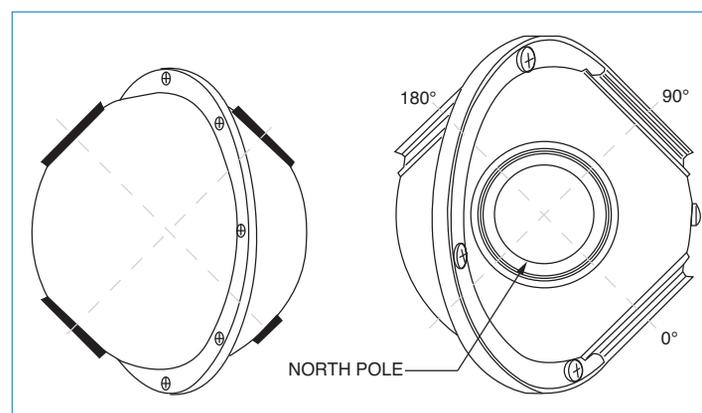
Flat Black Coating

Accessory products are available not only in either Spectralon™, Spectrafect™, or gold, but also in Flat Black type coating in some cases. Flat Black type highly absorbs light and is used to imitate an open port, which does not have any reflection, but to reduce introduction of ambient light into the sphere.

Integrating Spheres



819D 3-Port sphere port locations. Note that a 2" sphere shell is cubic.



819C 4-Port sphere port locations. Note that a 2" sphere shell is cubic.

Sphere Port Sizes

3-Port Spheres

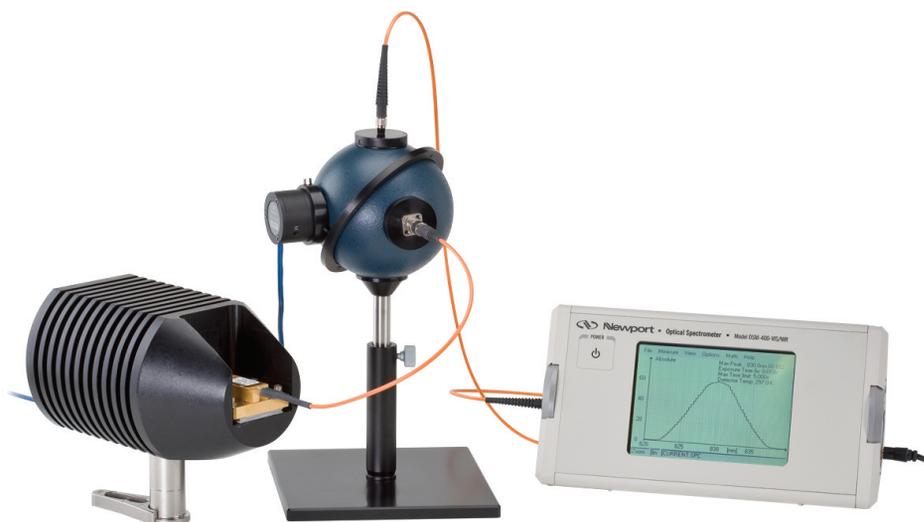
Model (3 Port Spheres)	0 Deg Port	90 Deg Port	North Pole Port
819D-GL-3	1.0 in.	1.0 in.	1.0 in.
819D-GL-4	1.5 in.	1.0 in.	1.0 in.
819D-GL-6	2.5 in.	1.0 in.	1.0 in.
819D-SF-4	1.5 in. (w/ 1 in. port frame reducer)	1.0 in.	1.0 in.
819D-SF-6	2.5 in. (w/ 1 in. port frame reducer)	1.0 in.	1.0 in.
819D-SL-2	1.0 in.	0.5 in.	0.5 in.
819D-SL-3.3	1.5 in. (w/ 1 in. port frame reducer)	1.0 in.	1.0 in.
819D-SL-5.3	2.5 in. (w/ 1 in. port frame reducer)	1.0 in.	1.0 in.

4-Port Spheres

Model (4 Port Spheres)	0 Deg Port	90 Deg Port	180 Deg Port	North Pole Port
819C-GL-3	1.0 in.	1.0 in.	1.0 in.	1.0 in.
819C-GL-4	1.5 in.	1.0 in.	1.0 in.	1.0 in.
819C-GL-6	2.5 in.	1.0 in.	1.0 in.	1.0 in.
819C-SF-4	1.5 in. (w/ 1.5 in. port plug)	1.0 in.	1.0 in.	1.0 in.
819C-SF-6	2.5 in. (w/ 2.5 in. port plug)	1.0 in.	1.0 in.	1.0 in.
819C-SL-2	1.0 in. (w/ 1.0 in. port plug)	0.5 in.	0.5 in.	0.5 in.
819C-SL-3.3	1.5 in. (w/ 1.5 in. port plug)	1.0 in.	1.0 in.	1.0 in.
819C-SL-5.3	2.5 in. (w/ 2.5 in. port plug)	1.0 in.	1.0 in.	1.0 in.

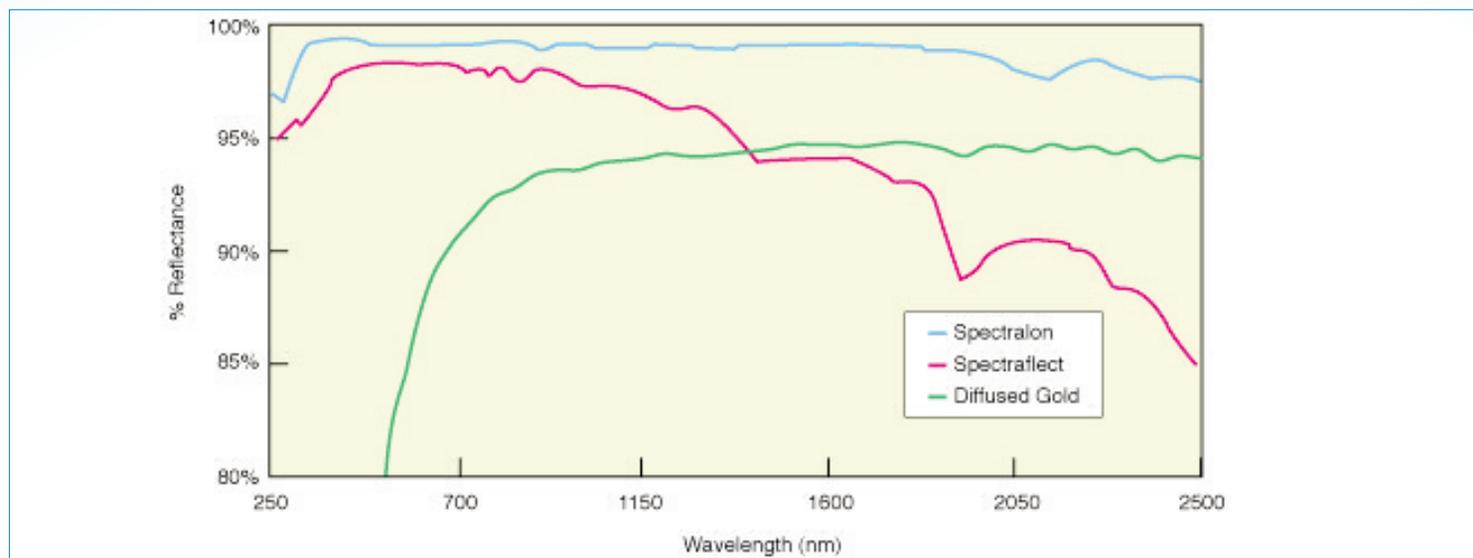
Note that certain models come with accessories premounted. Refer to the table above for details.

Model	Sphere Diameter	Coating Type	Thermal Limit
819C-SF-4, 819D-SF-4	4-Inches	Spectrafect™	100
819C-SF-6, 819D-SF-6	6-Inches	Spectrafect™	100
819C-SL-2, 819D-SL-2	2-Inches	Spectralon™	350
819C-SL-3.3, 819D-SL-3.3	3.3-Inches	Spectralon™	350
819C-SL-5.3, 819D-SL-5.3	5.3-Inches	Spectralon™	350
819C-GL-3, 819D-GL-3	=1,Dimensions	Spectralon™	=1,Thermal Limit
819C-GL-4, 819D-GL-4	=3,Dimensions	Spectralon™	=3,Thermal Limit
819C-GL-6, 819D-GL-6	=5,Dimensions	Spectralon™	=5,Thermal Limit



INTEGRATING SPHERE COMPONENTS

Integrating Sphere Coatings



Typical Characteristics for Sphere Coatings

Port Expanders and Reducers

819-PC-0.5	0.5 to 1.0 in. Port Expander
819M-B-0.06-0.5	Integrating Sphere Port Reducer, 0.5 to 0.0625 inch, Flat Black
819M-B-0.12-0.5	Integrating Sphere Port Reducer, 0.5 to 0.125 inch, Flat Black
819M-B-0.12-1.0	Integrating Sphere Port Reducer, 1 to 0.125 inch, Flat Black
819M-B-0.25-0.5	Integrating Sphere Port Reducer, 0.5 to 0.25 inch, Flat Black
819M-B-0.25-1.0	Integrating Sphere Port Reducer, 1 to 0.25 inch, Flat Black
819M-B-0.50-1.0	Integrating Sphere Port Reducer, 1 to 0.5 inch, Flat Black
819M-B-0.75-1.0	Integrating Sphere Port Reducer, 1 to 0.75 inch, Flat Black
819M-B-11-1.0	Integrating Sphere Port Reducer, 1 inch port reducer to 11 mm

Detector Adaptors

819-DA	Detector Adaptor for 818 detectors, to 1 inch port
819M-DAT	Detector Adaptor for 918(D) Series, to 1in Port
819M-CM-1.0	Port Plug, 1.0 inch, Spectralect, 819 Series
819M-SM1-1.0	SMA Fiber Adaptor, 1 inch, Flat Black, 819 Series

Base Plates

819M-B4	Base Plate, 819 Integrating Sphere, 4 x 4 inch
819M-B6	Base Plate, 819 Integrating Sphere, 6 x 6 inch
819M-B8	Base Plate, 819 Integrating Sphere, 8 x 8 inch

Port Frame Reducers and Sample Holder

819M-PFR-SF-1.5	Port Frame Reducer, 1.5 to 1 inch, Spectralect, 819M Series
819M-SAM-1.0	Sample Holder, 1 inch port, External Mounting, 819 Series
819M-PFR-1.0-2.5	Port Frame Reducer, 2.5 to 1 inch, Spectralect, 819M Series
819M-G-0.50-1.0	Port Reducer 1" to 0.5", Diffused Gold, 819 Series

Fiber Adaptors

819M-FC-0.5	FC Fiber Adaptor, 0.5 inch Port, Flat Black, 819 Series
819M-FC-1.0	FC Fiber Adaptor, 1 inch Port, Flat Black, 819 Series
819M-LC-0.5	LC Fiber Adaptor, 0.5 inch Port, Flat Black, 819 Series
819M-LC-1.0	LC Fiber Adaptor, 1 inch Port, Flat Black, 819 Series
819M-SMA-0.5	SMA Fiber Adaptor, 0.5 inch, Flat Black, 819 Series
819M-SMA-1.0	SMA Fiber Adaptor, 1 inch, Flat Black, 819 Series
819M-ST-0.5	ST Fiber Adaptor, 0.5 inch, Flat Black, 819 Series
819M-ST-1.0	ST Fiber Adaptor, 1 inch, Flat Black, 819 Series
819M-SMA-0.5G	SMA Fiber Adaptor, 0.5 inch, Flat Black, 819 Series
819M-SMA-1.0G	SMA Fiber Adaptor, 1 inch, Flat Black, 819 Series

Port Plugs

819M-PP-SF-0.5	Port Plug, 0.5 inch, Spectralect, 819 Series
819M-PP-SF-1.0	Port Plug, 1.0 inch, Spectralect, 819 Series
819M-PP-SF-1.5	Port Plug, 1.5 inch, Spectralect, 819 Series
819M-PP-SF-2.5	Port Plug, 2.5 inch, Spectralect, 819 Series
819M-PP-SL-0.5	Port Plug, 0.5 inch, Spectralon, 819 Series
819M-PP-SL-1.0	Port Plug, 1.0 inch, Spectralon, 819 Series
819M-PP-SL-1.5	Port Plug, 1.5 inch, Spectralon, 819 Series
819M-PP-SL-2.5	Port Plug, 2.5 inch, Spectralon, 819 Series
819M-PP-1.0	Port Plug, 1.0 inch, Spectralect, 819 Series
819M-PP-2.5	Port Plug, 1.0 inch, Spectralect, 819 Series
819M-PP-GL-1.0	Port Plug, 1.0 inch, Diffused Gold, 819 Series
819M-PP-GL-0.5	Port Plug, 0.5 inch, Diffused Gold, 819 Series



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