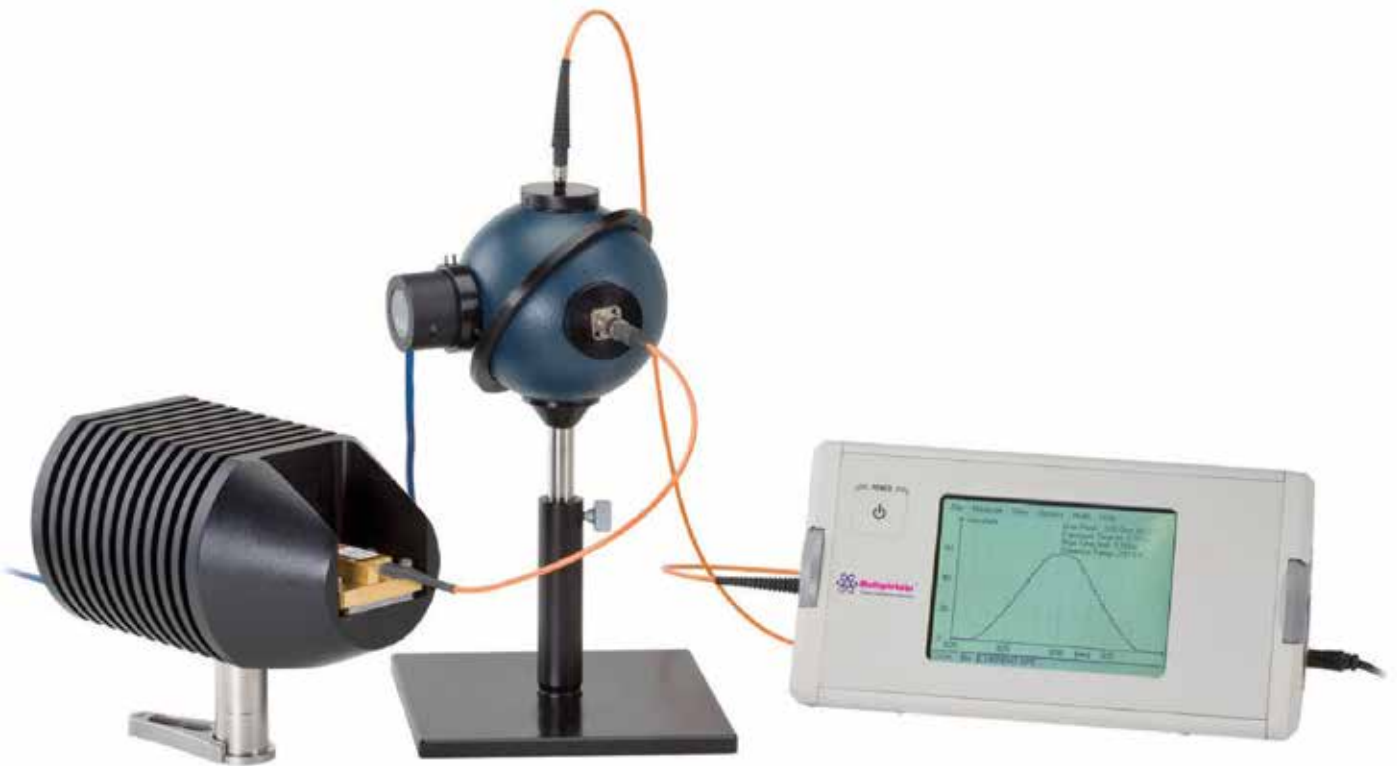


**Multiplelabs**  
Turnkey Laboratories Solutions

# ISC-9819C/9819D

Integrating Sphere Components



9819C (4 port spheres) and 9819D (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. also carries an extensive list of 9819M series accessories compatible with the 9819C and D spheres, including port plugs, port reducers, port frame reducers, fiber adapters, 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



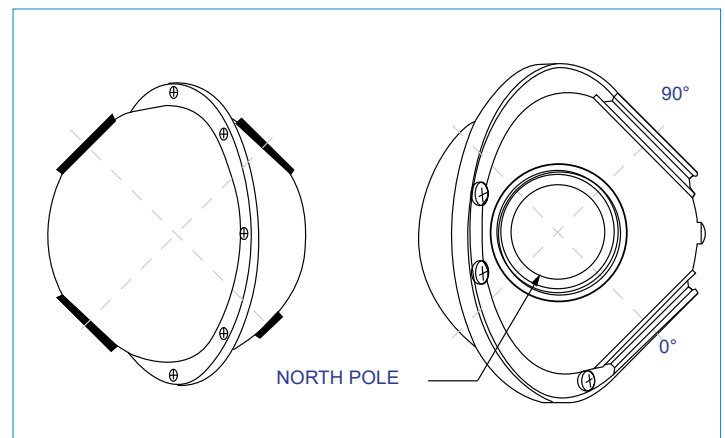
## ►► Sphere Materials

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  $\mu\text{m}$  (>90% at 800 nm, > 94% at 1550 nm) wavelength range. Its damage threshold is 4 times greater than Spectralon.

## ►► Flat Black Coating

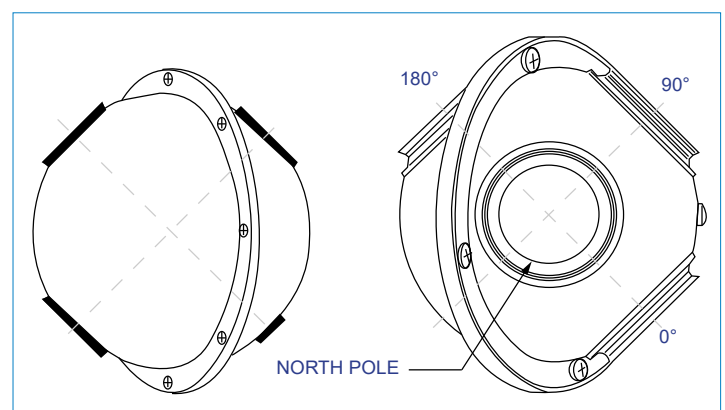
Accessory products are available not only in either Spectralon™, Spectrafect™, or gold, but also in Flat Black type coating in some cases. Flat Black type highly absorbs light and is used to imitate an open port, which does not have any reflection, but to reduce introduction of ambient light into the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



9819D 3-Port sphere port locations. Note that a 2" sphere shell is cubic.

## ►► 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 818 and 918D series photodiode detectors, fiber adapters, and base plates.



9819C 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
9819D-GL-3	1.0 in.	1.0 in.	1.0 in.
9819D-GL-4	1.5 in.	1.0 in.	1.0 in.
9819D-GL-6	2.5 in.	1.0 in.	1.0 in.
9819D-SF-4	1.5 in. (w/ 1 in. port frame reducer)	1.0 in.	1.0 in.
9819D-SF-6	2.5 in. (w/ 1 in. port frame reducer)	1.0 in.	1.0 in.
9819D-SL-2	1.0 in.	0.5 in.	0.5 in.
9819D-SL-3.3	1.5 in. (w/ 1 in. port frame reducer)	1.0 in.	1.0 in.
9819D-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
9819C-GL-3	1.0 in.	1.0 in.	1.0 in.	1.0 in.
9819C-GL-4	1.5 in.	1.0 in.	1.0 in.	1.0 in.
9819C-GL-6	2.5 in.	1.0 in.	1.0 in.	1.0 in.
9819C-SF-4	1.5 in. (w/ 1.5 in. port plug)	1.0 in.	1.0 in.	1.0 in.
9819C-SF-6	2.5 in. (w/ 2.5 in. port plug)	1.0 in.	1.0 in.	1.0 in.
9819C-SL-2	1.0 in. (w/ 1.0 in. port plug)	0.5 in.	0.5 in.	0.5 in.
9819C-SL-3.3	1.5 in. (w/ 1.5 in. port plug)	1.0 in.	1.0 in.	1.0 in.
9819C-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 (4 Port Spheres)	Sphere Diameter	Coating Type	Thermal Limit
9819C-SF-4, 9819D-SF-4	4-Inches	Spectrafect™	100
9819C-SF-6, 9819D-SF-6	6-Inches	Spectrafect™	100
9819C-SL-2, 9819D-SL-2	2-Inches	Spectralon™	350
9819C-SL-3.3, 9819D-SL-3.3	3.3-Inches	Spectralon™	350
9819C-SL-5.3, 9819D-SL-5.3	5.3-Inches	Spectralon™	350
9819C-GL-3, 9819D-GL-3	=1,Dimensions	Spectralon™	=1,Thermal Limit
9819C-GL-4, 9819D-GL-4	=3,Dimensions	Spectralon™	=3,Thermal Limit
819C-GL-6, 9819D-GL-6	=5,Dimensions	Spectralon™	=5,Thermal Limit

## ▶▶ Integrating Sphere Coatings



Typical Characteristics for Sphere Coatings

## Port Expanders and Reducers

9819-PC-0.5	0.5 to 1.0 in. Port Expander
9819M-B-0.06-0.5	Integrating Sphere Port Reducer, 0.5 to 0.0625 inch, Flat Black
9819M-B-0.12-0.5	Integrating Sphere Port Reducer, 0.5 to 0.125 inch, Flat Black
9819M-B-0.12-1.0	Integrating Sphere Port Reducer, 1 to 0.125 inch, Flat Black
9819M-B-0.25-0.5	Integrating Sphere Port Reducer, 0.5 to 0.25 inch, Flat Black
9819M-B-0.25-1.0	Integrating Sphere Port Reducer, 1 to 0.25 inch, Flat Black
9819M-B-0.50-1.0	Integrating Sphere Port Reducer, 1 to 0.5 inch, Flat Black
9819M-B-0.75-1.0	Integrating Sphere Port Reducer, 1 to 0.75 inch, Flat Black
9819M-B-11-1.0	Integrating Sphere Port Reducer, 1 inch port reducer to 11 mm

## Detector Adaptors

9819-DA	9819M-SM1-1.0
9819M-DAT	Detector Adaptor for 918(D) Series, to 1in Port
9819M-CM-1.0	Port Plug, 1.0 inch, Spectralect, 9819 Series
9819M-SM1-1.0	SMA Fiber Adaptor, 1 inch, Flat Black, 9819 Series

## Base Plates

9819M-B4	Base Plate, 9819 Integrating Sphere, 4 x 4 inch
9819M-B6	Base Plate, 9819 Integrating Sphere, 6 x 6 inch
9819M-B8	Base Plate, 9819 Integrating Sphere, 8 x 8 inch

## Port Frame Reducers and Sample Holder

9819M-PFR-SF-1.5	Port Frame Reducer, 1.5 to 1 inch, Spectrafect, 9819M Series
9819M-SAM-1.0	Sample Holder, 1 inch port, External Mounting, 9819 Series
9819M-PFR-1.0-2.5	Port Frame Reducer, 2.5 to 1 inch, Spectrafect, 9819M Series
9819M-G-0.50-1.0	Port Reducer 1" to 0.5", Diffused Gold, 9819 Series

## Fiber Adaptors

9819M-FC-0.5	FC Fiber Adaptor, 0.5 inch Port, Flat Black, 9819 Series
9819M-FC-1.0	FC Fiber Adaptor, 1 inch Port, Flat Black, 9819 Series
9819M-LC-0.5	LC Fiber Adaptor, 0.5 inch Port, Flat Black, 9819 Series
9819M-LC-1.0	LC Fiber Adaptor, 1 inch Port, Flat Black, 9819 Series
9819M-SMA-0.5	SMA Fiber Adaptor, 0.5 inch, Flat Black, 9819 Series
9819M-SMA-1.0	SMA Fiber Adaptor, 1 inch, Flat Black, 9819 Series
9819M-ST-0.5	ST Fiber Adaptor, 0.5 inch, Flat Black, 9819 Series
9819M-ST-1.0	ST Fiber Adaptor, 1 inch, Flat Black, 9819 Series
9819M-SMA-0.5G	SMA Fiber Adaptor, 0.5 inch, Flat Black, 9819 Series
9819M-SMA-1.0G	SMA Fiber Adaptor, 1 inch, Flat Black, 9819 Series

## Port Plugs

9819M-PP-SF-0.5	Port Plug, 0.5 inch, Spectrafect, 9819 Series
9819M-PP-SF-1.0	Port Plug, 1.0 inch, Spectrafect, 9819 Series
9819M-PP-SF-1.5	Port Plug, 1.5 inch, Spectrafect, 9819 Series
9819M-PP-SF-2.5	Port Plug, 2.5 inch, Spectrafect, 9819 Series
9819M-PP-SL-0.5	Port Plug, 0.5 inch, Spectralon, 9819 Series
9819M-PP-SL-1.0	Port Plug, 1.0 inch, Spectralon, 9819 Series
9819M-PP-SL-1.5	Port Plug, 1.5 inch, Spectralon, 9819 Series
9819M-PP-SL-2.5	Port Plug, 2.5 inch, Spectralon, 9819 Series
9819M-PP-1.0	Port Plug, 1.0 inch, Spectrafect, 9819 Series
9819M-PP-2.5	Port Plug, 1.0 inch, Spectrafect, 9819 Series
9819M-PP-GL-1.0	Port Plug, 1.0 inch, Diffused Gold, 9819 Series
9819M-PP-GL-0.5	Port Plug, 1.0 inch, Diffused Gold, 9819 Series