

Reflectance/Transmittance Integrating Spheres

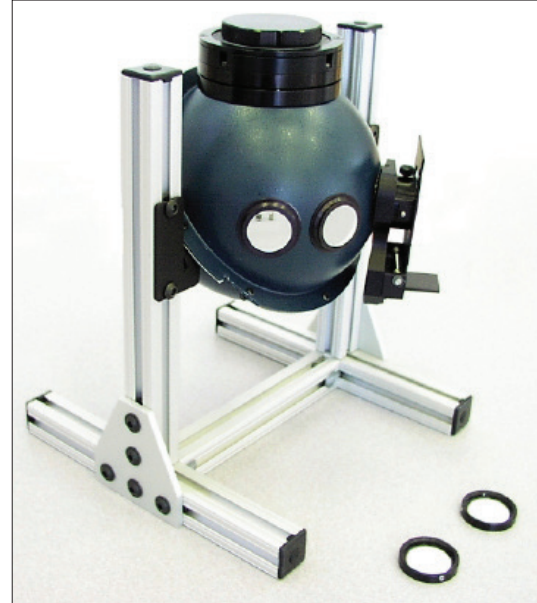
Accurate and flexible design accommodates a wide variety of samples

Labsphere's Reflectance/Transmittance Sphere Assemblies are one of our most basic reflectance measurement products and can be used to measure the reflectance or transmittance of a wide variety of sample mediums. Offered in two standard designs, each sphere is available in one of two reflective coatings; Spectrafect®, our highly diffuse reflective coating effective over the 250 - 2500 nm range and Infragold®, designed for use in the 0.7 - 20 μm wavelength range.

The RT Spheres feature five 1 inch diameter ports to accommodate sample and reference beams necessary for a 8° double beam geometry, as well as port plugs required for 8° single beam geometry. A 0.5 inch detector port is located at the top of the sphere. A specular light trap is included for specular subtraction methods.

RTC Spheres add further versatility with two center mounted sample holders so users are able to measure reflectance and transmittance versus incident angle of radiation. Five ports accommodate sample and reference beams with a center mount stage located at the top of the sphere, and a 0.5 inch detector port located at the bottom of the sphere assembly.

Both sphere assemblies are suitable for all geometric transmittance measurements. The RT Sphere Assembly can perform reflectance measurements in the specular included ($8^\circ/\text{h}$) and specular excluded ($8^\circ/\text{d}$) geometries. The RTC Integrating Spheres provide specular included ($8^\circ/\text{h}$) and specular excluded ($8^\circ/\text{d}$) geometries, as well as reflectance measurement capabilities at variable angles of incidence.



The sphere ports are knife-edged to permit collection of wide-angle scatter and the baffling is minimized to allow the detector a maximum view of the sphere wall. A detector port is located at the top or bottom of the sphere and baffled from receiving direct radiation from the sample and reference ports.

Measure:

- Reflectance and transmittance of materials
- Reflectance of opaque samples
- Transmittance of turbid samples
- Color properties
- Reflectance system design
- Infrared reflectance
- Reflectance vs. Angle

R/T Spheres Specifications and Ordering Information

Model Number	RT-060-SF	RT-060-IG
Order Number:	AS-02484-100	AS-02485-100
Sphere Diameter:	6 inch	6 inch
Sphere Coating:	Spectrafect	Infragold
Optimum Spectral Range:	250 - 2500 nm	0.7 μ m - 20 μ m
Detector Port Diameter:	0.5 inch	0.5 inch
Sample and Reference Ports:	5	5
Sample and Reference Port Diameters: (Qty)	1 inch (5)	1 inch (5)
Port Plugs:	PP-100-SF (2) PP-125-SF (2)	PP-100-IG (2) PP-125-IG (2)
0° Sample Holder:	1	1
8° Sample Holder:	1	1
Light Trap:	1	1
Sphere Mount:	1/4 - 20 boss mounting post and base assembly	1/4 - 20 boss mounting post and base assembly

R/T Spheres with Center Mount Specifications and Ordering Information

Model Number	RTC-060-SF	RTC-060-SF-JAW	RTC-060-SF-CUV	RTC-060-SF-CLIP
Order Number	AS-02484-000	AS-02484-201	AS-02484-202	AS-02484-203
Sphere Diameter:	6 inch	6 inch	6 inch	6 inch
Mount Type:	Center Mount	Jaw Center Mount	CUV Center Mount	Jaw Center Mount
Sphere Coating:	Spectrafect	Spectrafect	Spectrafect	Spectrafect
Optimum Spectral Range:	250 - 2500 nm	250 - 2500 nm	250 - 2500 nm	250 - 2500 nm
Detector Port Diameter:	0.5 inch	0.5 inch	0.5 inch	0.5 inch
Sample and Reference Ports:	5	5	5	5
Sample and Reference Port Diameters: (Qty)	1 inch (3) 1.25 inch (2)	1 inch (3) 1.25 inch (2)	1 inch (3) 1.25 inch (2)	1 inch (3) 1.25 inch (2)
Port Plugs:	PP-100-SF (2) PP-125-SF (2)	PP-100-SF (2) PP-125-SF (2)	PP-100-SF (2) PP-125-SF (2)	PP-100-SF (2) PP-125-SF (2)
0° Sample Holder:	1	1	1	1
8° Sample Holder:	1	1	1	1
Light Trap:	1	1	1	1
Sphere Mount:	Adjustable H frame assembly	Adjustable H frame assembly	Adjustable H frame assembly	Adjustable H frame assembly

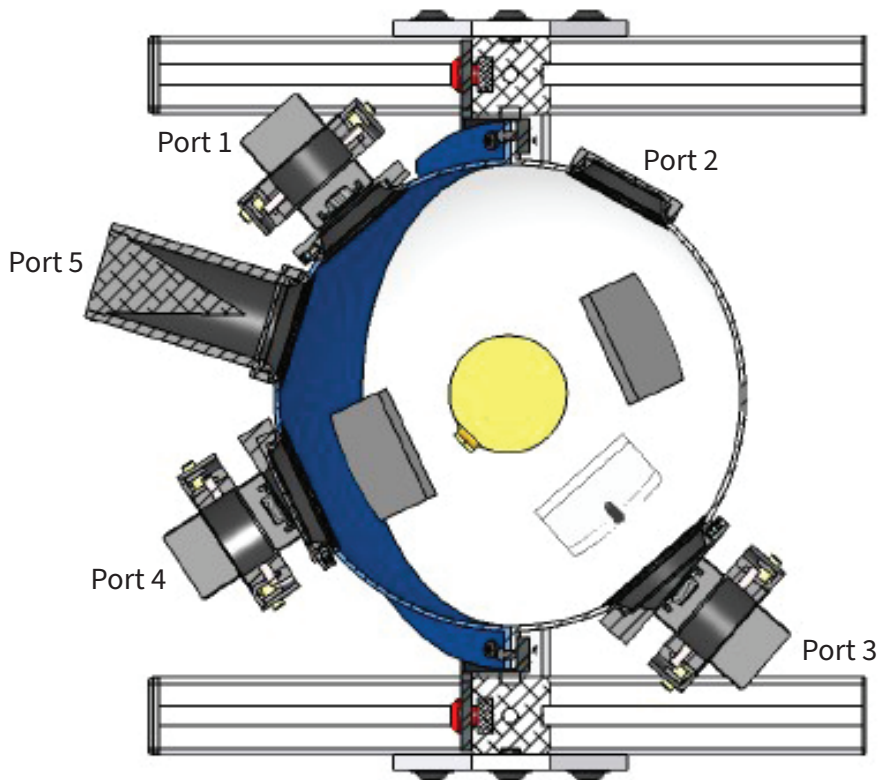
Model Number	RTC-060-IG
Order Number:	AS-02485-000
Sphere Diameter:	6 inch
Mount Type:	Center Mount
Sphere Coating:	Infragold
Optimum Spectral Range:	0.7 μ m - 20 μ m
Detector Port Diameter:	0.5 inch
Sample and Reference Ports:	5
Sample and Reference Port Diameters: (Qty)	1 inch (3) 1.25 inch (2)
Port Plugs:	PP-100-IG (2) PP-125-IG (2)
0° Sample Holder:	1
8° Sample Holder:	1
Light Trap:	1
Sphere Mount:	Adjustable H frame assembly

Optional Sample Holders for RTC-060-SF Spheres

Model Number	CMSH-RTC-JAW-SF	CMSH-RTC-CUV-SF	CMSH-RTC-CLIP-SF
Order Number	AS-02486-000	AS-02728-000	AS-02759-000
	Jaw Center Mount Sample Holder for RTC-060-SF	Cuvette Center Mount Sample Holder for RTC-060-SF	Clip Center Mount Sample Holder for RTC-060-SF

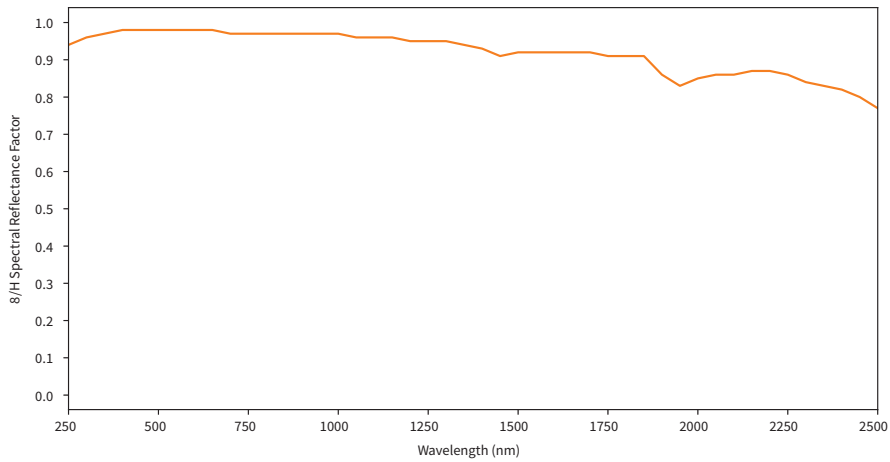


RTC-060 Top View



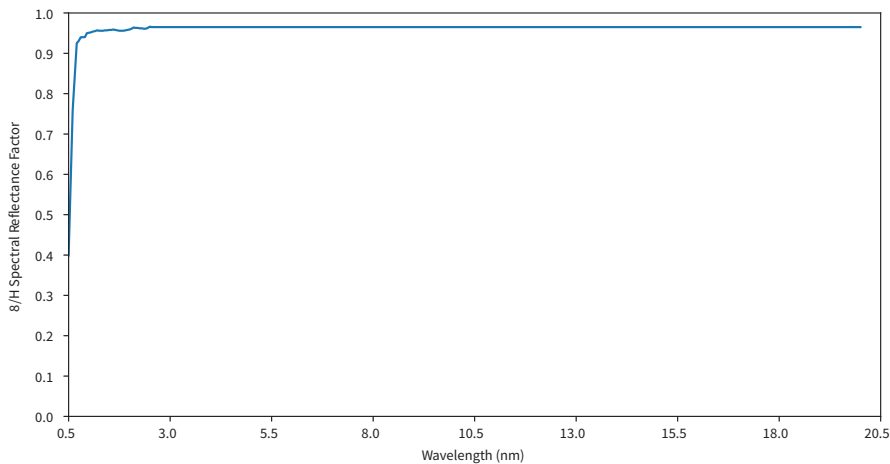
- Port 1: Sample Beam Port
- Port 2: Reference Beam Port
- Port 3: Sample Port
- Port 4: Reference Port
- Port 5: Specular Exclusion Port

Spectrafect Reflectance Coating



Spectralect is a highly diffuse reflective coating effective over the 250 - 2500 nm range

Infragold Reflectance Coating



Infragold is designed for use in the 0.7 - 20 μm wavelength range.

RT-060-SF and RT-060-IG Reflectance/Transmittance Spheres

Labsphere's RT-060-XX Sphere features five 1 inch diameter ports to accommodate sample and reference beams necessary for a 8° double beam geometry, as well as port plugs required for 8° single beam geometry. Two one inch sample holders are provided with the sphere to mount the sample and a reflectance/transmittance standard. A 0.50 inch detector port is located at the top of the sphere. The sphere also comes with a detector mask to limit the detector field of view. A specular light trap is included for specular subtraction methods.

The spheres are appropriate for specular included and specular excluded reflectance measurements, measurements of forward scattering and back scattering, and measurement of the transmittance of turbid or scattering samples. The sphere ports are knife-edged to permit collection of wide angle scatter and the baffling is minimized to allow the efficient integration. To ensure high sphere efficiency, the total port area is <5% of the sphere surface area. The integrating spheres each have a mounting assembly consisting of a rod base with a 1/4 - 20 boss, so sphere height is easily adjustable.

RTC-060-SF and RTC-060-IG Reflectance/Transmittance Spheres with Center Mount

With the addition of center mounted sample holders, users of Labsphere's RTC-060-XX are able to measure reflectance, and in some cases, transmittance versus incident angle of radiation.

The RTC-060-IG Sphere features four ports to accommodate sample and reference beams. Three ports are 1 inch diameter and two ports are 1.25 inch diameter. A center mount stage is located at the top of the sphere and a 0.5 inch detector port is located at the bottom of the sphere assembly. The sphere comes with a detector mask to limit the detector field of view.

The RTC Series Integrating Sphere Assemblies include five sample holders, one center mount sample holder, two 1.25 inch diameter sample holders and one light trap. The center mount sample holder allows for the measurement of reflectance versus incident angle of a wide variety of samples. The jaw center mount sample holder is included with the sphere, while clip and cuvette center mount sample holders are optional accessories. The jaw center mount sample holder may be used for samples that can be clamped. Samples as large as 1 inch by 2 inches and up to 0.38 inches thick can be held by the jaws of the sample holder. The clip center mount sample holder is designed for thin films or samples which do not have the rigidity to be held by the jaw sample holder. Samples up to 1.50" x 2" x 0.125" thick can be held using the clip center mount sample holder. The cuvette center mount sample holder holds standard 12.5 mm square cuvettes and is used to hold liquids and powders for absorbance and scatter characterization.

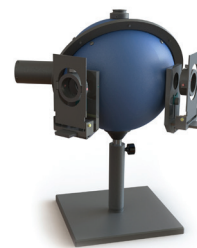
* Measured as the saturation signal divided by the standard deviation of the dark signal with 10 scans averaged.

** Stray light is the average reported transmittance from 210 - 370 nm through a 500 nm cut-on filter

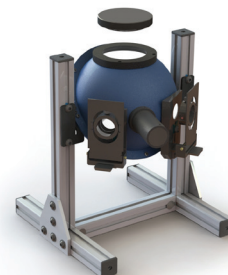
Optional Accessories

Reflectance Standard Set

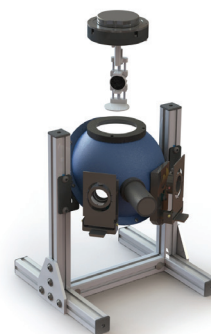
Labsphere Detector Assemblies



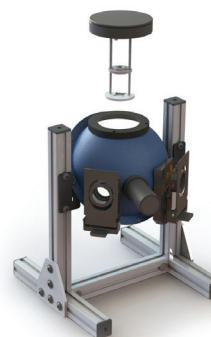
RT-060-SF



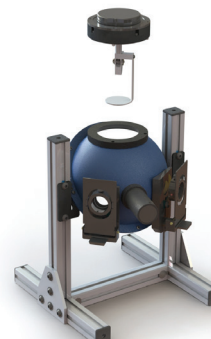
RTC-060-SF



RTC-060-SF-JAW



RTC-060-SF-CUV



RTC-060-SF-CLIP