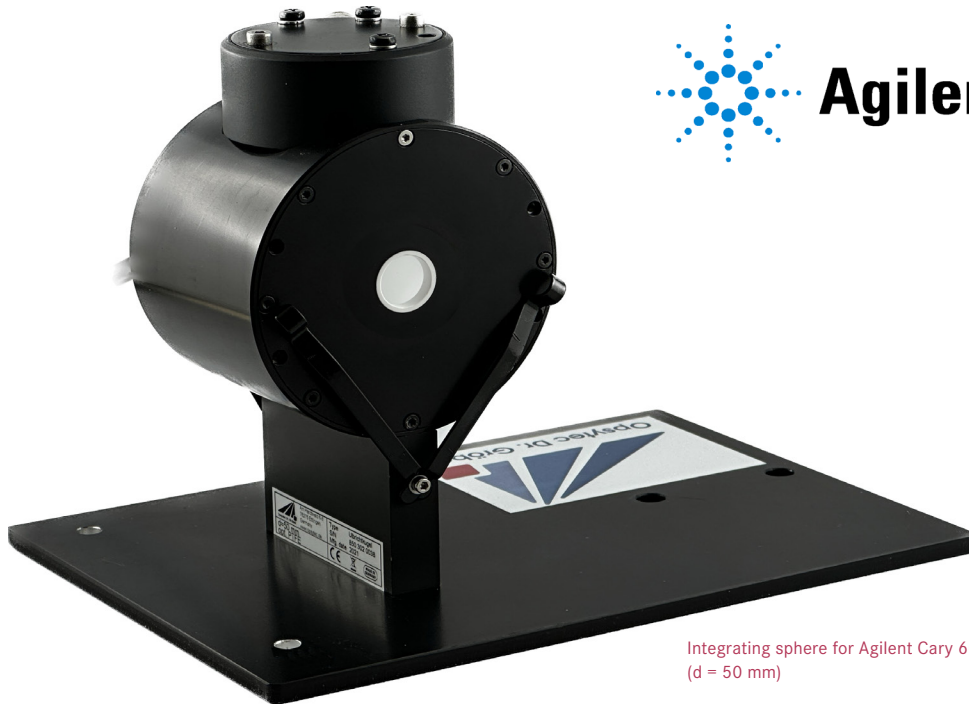


Integrating sphere for Cary 60



Integrating sphere for Agilent Cary 60
(d = 50 mm)

The Agilent Cary 60 spectrophotometer measures the direct transmission and reflection. With the Opsytec integrating sphere you can also measure the diffuse transmission and reflection of translucent samples. Liquid and powder samples can also be measured using the extensive accessory set. Even geometries such as 0° and 8° are supported. Perfect for comprehensive material characterization!

Enrich your spectrophotometric measurements with our highly reflective integrating sphere, specially developed for the Agilent Cary 60 spectrophotometer. This sphere guarantees precise, reliable and highly accurate reflectance measurements in research laboratories, quality control departments and scientific institutions.

Discover the outstanding features of our integrating sphere:

- Designed to work seamlessly with the Agilent Cary 60 spectrophotometer, making it easy to integrate into your existing setup.
- The sphere is made of a high quality diffuse reflective material (PTFE) that ensures uniform light distribution and minimal absorption.

- The sphere is equipped with a special bracket that allows easy mounting on your Agilent Cary 60 spectrophotometer.
- Manufactured from high quality materials, as solid hollow spheres in a cylindrical aluminum housing to ensure long life and reliable performance.

Rely on our high-quality integrating sphere to take your spectrophotometric analysis to the next level.

The integrating sphere was developed in collaboration with Agilent. No special software module or additional license is required for operation.

Increase the precision and accuracy of your measurements and get reliable results that meet your research and quality control requirements. Contact us today for more information and to purchase your high-reflectance integrating sphere for the Agilent Cary 60 spectrophotometer.

Get ready for excellent measurements in your lab!

TECHNICAL DATA, ACCESSORIES & MOUNTINGS

Diameter	50 mm
Material	PTFE
Detector	Si photodetector
Spectral range, usable	200 nm - 1100 nm
recommended	200 nm - 950 nm
Photometric range	~ OD 2.5
Inputs/outputs	2
Opening for sample access	10 mm
Filter holder	Fixed sample holder, on both sides
Accessory package:	8° Sample holder, 10mm
	Port reducer to 10 mm
	Powder cuvette holder 28 mm
	Cuvette holder 10 mm

SCOPE OF DELIVERY

- Integrating sphere for spectrophotometer Cary 60
- User manual
- Sample holder (SET) for solid samples
- Port cover with spherical surface
- Port cover

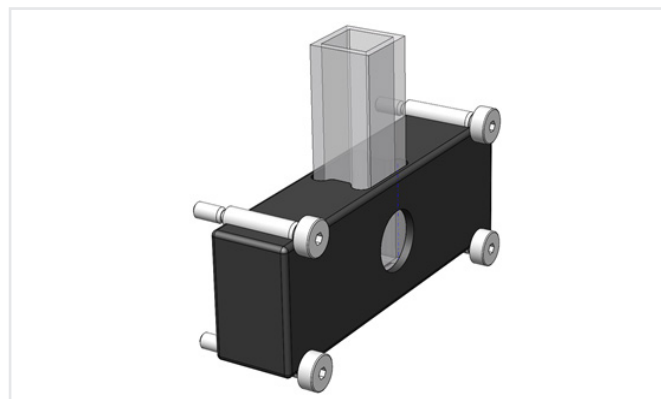
PART NUMBERS

Integrating sphere Cary 60	850305
Reflection standard (diffuse)	850313
Calib. Reflection standard	850314
Accessory package	850308
Individual Accessories:	
8° Sample holder, 6 mm	850309
Port reducer to 6 mm	850310
Powder cuvette holder 28 mm	850311
Cuvette holder 10 mm	850312

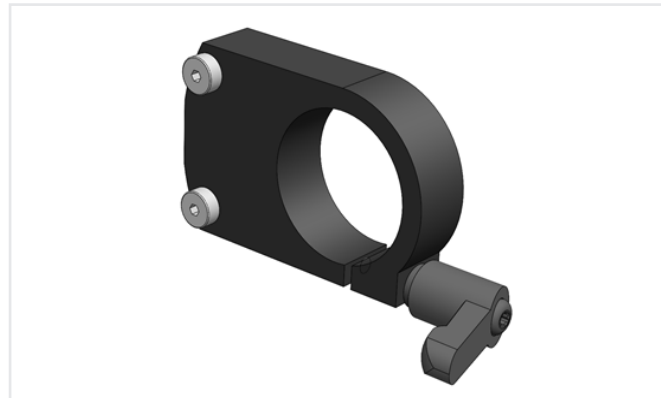
Since 1981, Opsytec Dr. Gröbel manufactures the UV-measurement equipment and integrating spheres. In 2003, we installed a 2500 mm integrating sphere at the PTB.



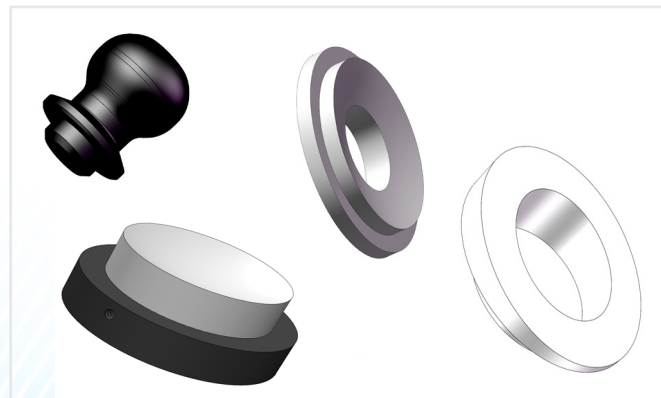
Sample holder (SET) for solid samples such as filters, glasses, foils, etc.



Cuvette holder for 10 mm cuvettes (cuvette not included)



Powder cuvette holder for 28 mm powder cuvettes (powder cuvette not included)



Portcover, Portcover with spherical surface, 8° sample holder, port reducer

NOTES

Instructions for use:

- Make sure that the sphere is properly cleaned and calibrated before each properly cleaned and calibrated before each measurement.
- Keep the inner surfaces of the sphere clean to ensure accurate measurement results.
- Follow the instructions of the spectrophotometer manufacturer's instructions for integrating the integrating sphere
- For absolute measurements you will need a calibrated reflectance standard.

Direct vs. diffuse transmission

Direct transmission typically occurs when the optical sample is homogeneous and transparent. This means that the sample has no significant scattering, absorption or haze. Direct transmission can be measured with many spectrophotometers.

Diffuse transmission occurs in samples that are not completely transparent or homogeneous. These samples may contain scattering, haze or particles that deflect the light inside the sample and scatter it in different directions.

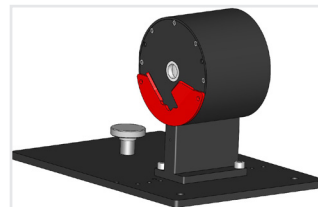
Measure the diffuse transmission as follows:

Direct vs. diffuse reflection

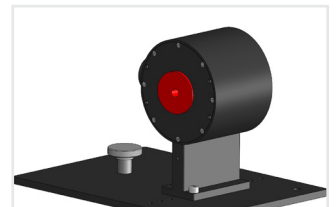
The „direct reflection“ and „diffuse reflection“ indicate the way in which light is reflected from a surface. Similar to transmission, they describe different types of light reflection, depending on the properties of the surface and the incident light. Accordingly, direct reflection typically occurs on smooth and flat surfaces, such as a mirror or a polished metal surface.

Diffuse reflection occurs on rough, uneven or matt surfaces that scatter light in different directions due to unevenness or microstructures.

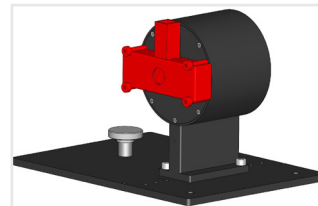
Measure the diffuse reflection as follows:



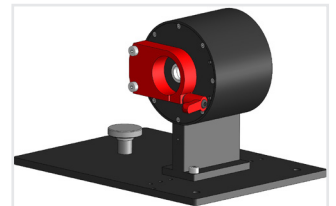
Solid samples (scattering)



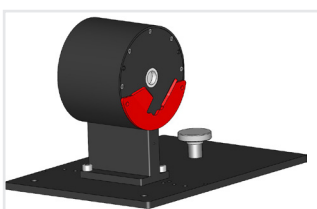
Fixed specimens, specular, with 8° adapter



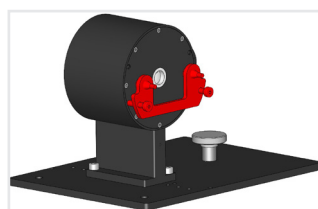
Liquid samples / cuvettes



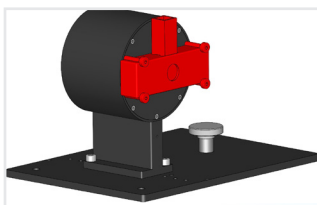
Powdered samples



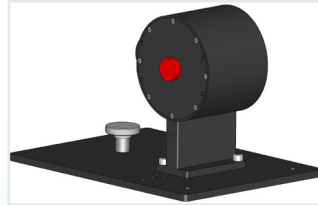
Fixed samples



Foil



Liquid samples / cells



Back closed with port lid

NOTES

Transparent vs. translucent samples

Transparent and translucent samples differ in their light transmission. Transparent materials, such as glass or clear plastic films, allow light to pass through unhindered and provide a clear view of what is behind them. Translucent materials, on the other hand, such as frosted glass or frosted plastic, allow light to penetrate but scatter it in different directions, so that objects behind them are not clearly visible. The distinction between transparent and translucent is important in order to understand the optical properties of materials and to use them accordingly in various applications, whether in architecture, design or science.

In translucent samples, penetrating radiation is scattered in the sample and partially reflected in the direction of incidence. The integrating sphere for the Cary 60 can illuminate the sample directionally through the second port and measure the diffusely reflected radiation.

Summary

To summarize, the choice between direct transmission and diffuse transmission depends on the type of sample to be examined and the specific examination objectives. In most cases, transparent, homogeneous samples are analyzed by direct transmission, while opaque or scattering samples require diffuse transmission measurement for more accurate characterization. This is where the Opsytec integrating sphere for the Cary 60 is the ideal complement.

Calibration

A reflectance standard with known reflectance is required for absolute calibration (850313 + 850314).

The wavelength calibration is already carried out in the Cary 60 spectrophotometer.