

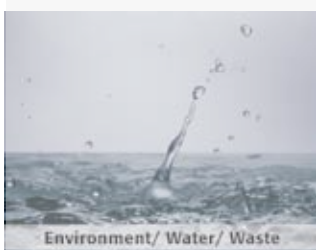
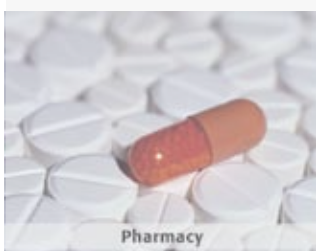
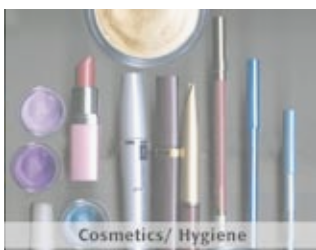
# SPECORD® and SPEKOL®

## Application in material analysis



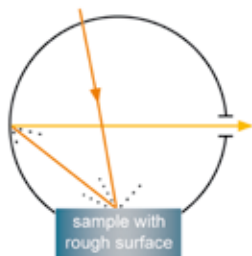
The optical properties of different materials are an attribute of their quality. The UV VIS spectrophotometer SPECORD® of Analytik Jena can be equipped with specific accessories and is best suitable for the determination of optical properties like transmittance, reflectance, color, whiteness, haze or luminous of solid materials. These tasks are of particular interest in paper and textiles industries as well as optical and plastic industries, color industries and other.

Material	Optical Property
Optical components (filters, lenses, mirrors)	Transmittance, Reflectance
Glass, coated glass	Transmittance, Color
Plastic foils	Transmittance, Haze, Luminous
Plastic materials	Color
Paper	Whiteness, Color
Textiles, Fabrics	Whiteness, Color
Cellulose	Whiteness, Color
Leather	Color
Floor	Whiteness
Dental surfaces	Whiteness



The diffuse reflectance accessory with integrating sphere for SPECORD® is outstandingly suited for diffuse reflectance measurements of solids with textured (rough, grained, etc.) surfaces and powder samples as well as for diffuse transmittance measurements of light scattering samples. The obtained result is the respective reflectance or transmittance spectrum, from which the whiteness and yellowness indices, the color or other parameters can be calculated using the WinASPECT® module color software.

# SPECORD® and SPEKOL® – Application in material analysis



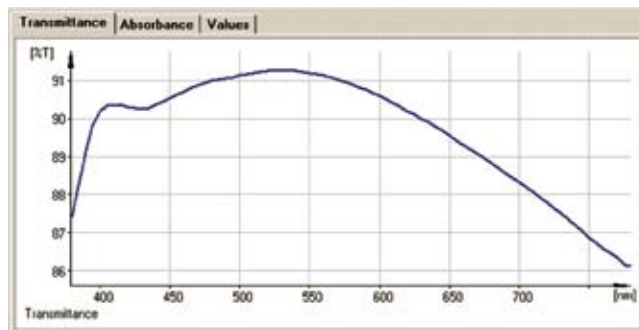
Set-up: Beam path of the integrating sphere



Integrating (Ulbricht) sphere

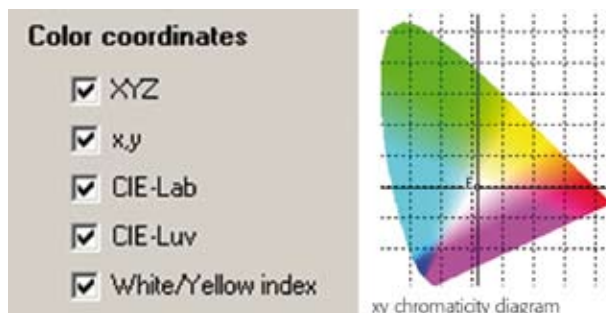
## Transmittance, Haze, Luminous

The standard for the determination of transparent materials provides the use of an integrating sphere, to ensure the uniform illumination of the receiver surface in the photometer, independent of any influence (scattering, deflection) on the beam by the sample. Because of that, the accuracy of the measurement results is improved.



## Color

For the determination of the color of a material, VIS spectra are scanned and then evaluated using the color software. This software offers the possibility of calculating different color indexes with consideration of different angles of incidence and light models.



## Whiteness

The whiteness index is intended to compare the similarity of the shade with ideal white; the yellowness index describes the absence of brightness or shades of gray in a color. VIS spectra are scanned and then evaluated using the color to calculate the whiteness and yellowness indices analogue to the norms ASTM: E 313-67 and DIN 6167.

Material	Whiteness	Yellowness
Paper	70 - 79	1 - 2
Textiles	72 - 76	2 - 3
Floor	26 - 31	15 - 17
Dentals	26 - 28	13 - 39

## Recommended instrumentation

Device	SPECORD® 210	822-02101-2
	SPECORD® 250	823-02501-2
Accessory	Integrating sphere	820-60139-0
Software	WinASPECT® module color software	820-60178-2

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Subject to changes in design and scope of delivery as well as further technical development!