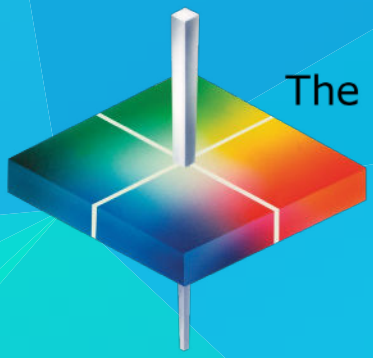


The world's true measure of color

HunterLab

# COLOR AND APPEARANCE

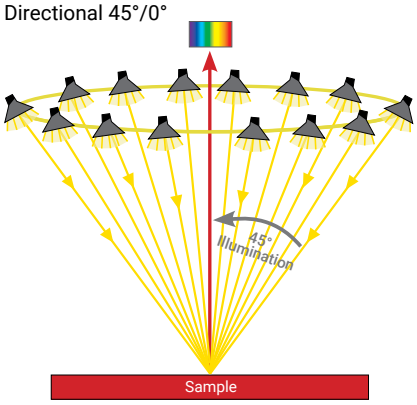
## MEASUREMENT SYSTEMS

visit **www.hunterlab.eu**

# Color Measurement Systems

## The right geometry for your industry application

Directional 45°/0°



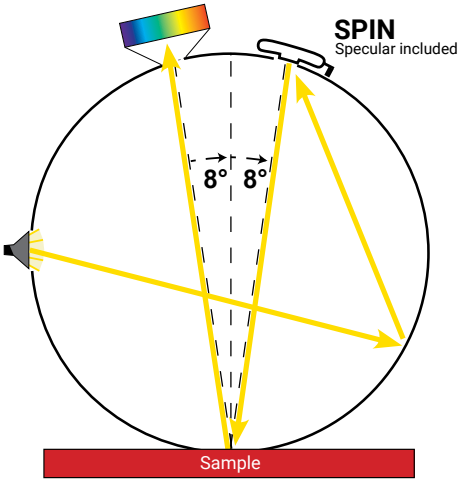

Regarding the sample shown on right, the diffuse geometry (d/8°), used in sphere instruments, will tell you that the sample is of the same color, no matter what the texture is. An instrument with the directional geometry (45°/0° or 0°/45°) will indicate that the four quadrants are different. Exactly just like your eye sees it. Which one is right then? That depends on your need.


As one piece, this plastic plaque is the same color but with a different color appearance dependent on the degree of surface roughness in each quadrant.

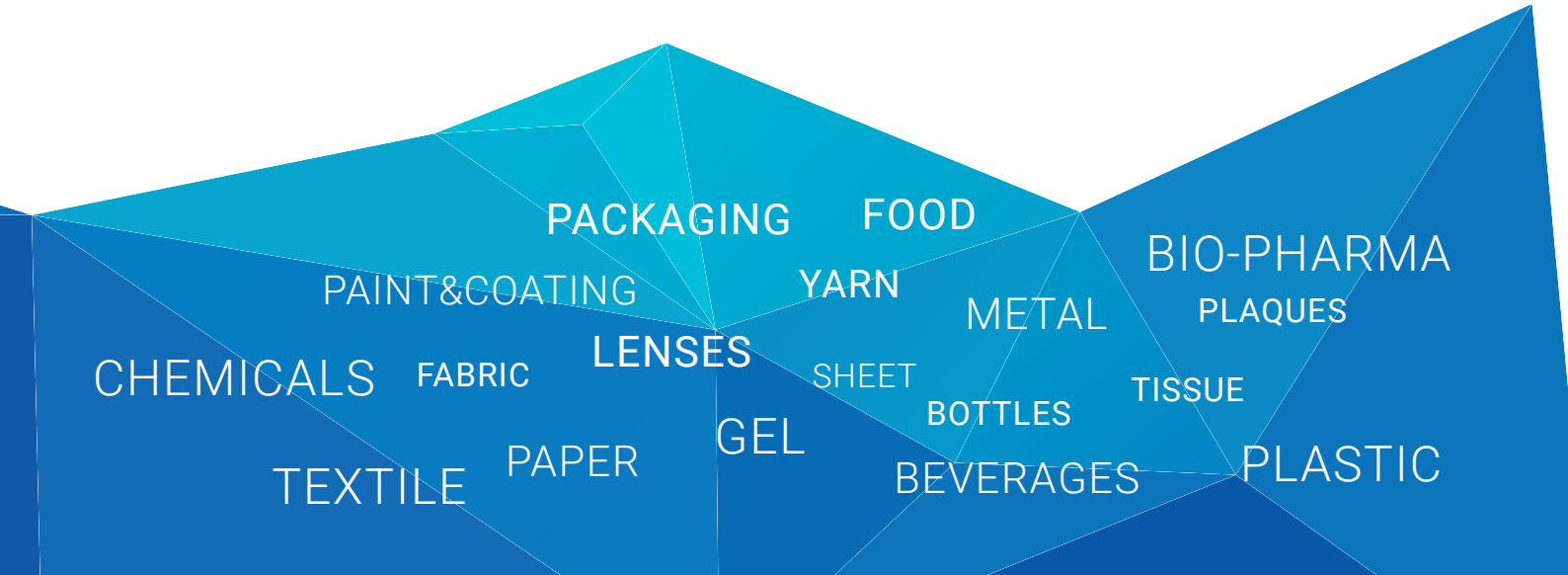
In case the visual impression is important to you, the 45°/0° or 0°/45° instrument is the most appropriate. This directional geometry includes surface characteristics of the sample and gives you information on both the color and texture/gloss. It mimics our human perception.

On the other side, the diffuse geometry (d/8°) is best suited, if you focus purely on the color (for color matching purposes). There are two modes available for this geometry: SPIN (specular included) does not match genuinely our visual impression since it includes the glossy component and the structure characteristic in the measurement. SPEX (specular excluded) can approximate the visual perception by partially eliminating the gloss and texture, but not the way directional geometry does it.
Nonetheless, the sphere geometry is the only geometry applied for transmission measurements. The diffuse illumination minimizes measurement errors from light scattering variations and provides highly accurate transmission measurements.

Diffuse d/8°




Our well-designed instruments portfolio offers a complete range of products that meet all industry application needs.



# Diffuse Sphere Geometry Instruments

## MiniScan® EZ

**diffuse d/8°** **reflectance**

Our portable diffuse d/8° spectrophotometer measures samples on the plant production floor, in storage areas, shipping departments, laboratories or virtually anywhere that is convenient.

- Spectral Range: 400 nm - 700 nm.
- Various views displaying color data, color plot, spectral data and spectral plots.
- Thousands of readings using rechargeable AA batteries.
- Rubberized handle with thumb-tip navigation pad.
- Product standard storage with Pass/Fail.
- Self-contained. Can be used with optional EasyMatch®QC software for PC.

## UltraScan® PRO

**diffuse d/8°** **reflectance/transmittance**

The UltraScan PRO is designed to be your reference instrument for measuring both reflected and transmitted color. It is ideal for precise color measurement of liquids and solids and also transmission haze.

- Spectral Range: 350 nm - 1050 nm.
- 5 nm data interval.
- Haze measurement.
- Sample reflectance measurement areas: 25,4 mm (1 in), 13 mm (0,50 in) and 7 mm (0,25 in).
- Specular Component included or excluded and UV control filter, optional using supplied fluorescent standard.
- Color Quality Control Software EasyMatch®QC for PC included.

## UltraScan® VIS

**diffuse d/8°** **reflectance/transmittance**

The visible range color measurement spectrophotometer scans the entire wavelength range recommended by the CIE.

- Spectral Range: 360 nm - 780 nm.
- Haze measurement.
- Sample reflectance measurement areas: 25,4 mm (1 in) and 9,5 mm (0,37 in).
- Specular Component included or excluded and UV control filter (optional fluorescent standard available).
- Color Quality Control Software EasyMatch®QC for PC included.

## Vista®

**diffuse d/0°** **transmittance**

Vista® includes electronic calibration, a spill resistant sample compartment and comes preloaded with most common transmission scales and indices including PtCo/Hazen/APHA, Gardner Color and many more. Haze measurements compliant to ASTM D1003.

- Spectral Range: 400 nm - 700 nm.
- Simultaneously measures the transmission color and haze of liquids, solids and films.
- One-touch standardization and small compact footprint.
- Multiple data views – color data, color view, spectral data, spectral plot, among others.
- Hi-Res full color touch interface with embedded Color Quality Control Software including all common color scales and indices.

# Directional Geometry Instruments

## MiniScan® EZ

**45°/0°** **reflectance**

Our portable 45°/0° spectrophotometer measures samples on the plant production floor, in storage areas, shipping departments, laboratories or virtually anywhere that is convenient.

- Spectral Range: 400 nm - 700 nm.
- Various views displaying color data, color plot, spectral data and spectral plots.
- Thousands of readings using rechargeable AA batteries.
- Rubberized handle with thumb-tip navigation pad.
- Product standard storage with Pass/Fail.
- Self-contained. Can be used with optional EasyMatch®QC software for PC.

## ColorFlex® L2

**45°/0°** **reflectance**

A versatile, self-contained 45°/0° spectrophotometer designed to measure the reflected color of a wide range of materials (solids, powders, pastes, pellets, liquids), accommodating diverse textures and transparencies.

- Spectral Range: 400 nm - 700 nm.
- Viewed sample area of 25,4 mm (1 in), optional masking port plates available.
- Small footprint and sealed spillproofed enclosure.
- Built-in camera for sample viewing and screen recording
- Optional port for Sample Cup: 64 mm.
- Uses improved internal QC-Software Essentials 2.0.

## Agera® L2

**0°/45°** **reflectance**

Our most versatile high performance 0°/45° spectrophotometer measures reflectance of smooth and textured solids, pellets, granules, powders, plaques, pastes and liquids.

- Spectral Range: 400 nm - 700 nm.
- UV Control and Calibration and true CIE-quality D65 daylight illumination.
- Viewed sample area: 50,8 mm (2 in), 25,4 mm (1 in) and 15,9 mm (5/8 in).
- Ultra Dark-Mode for deep-color precision.
- ASTM 60° gloss measurement.
- Embedded camera provides true 45°/0° sample viewing and image capture.
- Hi-Res full color touch interface with embedded Color Quality Control Software including most common color scales and indices.

## Aeros®

**0°/30°** **reflectance**

Aeros® is measuring the color of coarse, non-homogeneous and irregularly shaped products. It revolutionizes color measurement systems by integrating a non-contact sensor and rotating sample dish in one stand-alone instrument.

- Spectral Range: 400 nm - 700 nm.
- Measures the largest sample area of any instrument for the best measurement accuracy and consistency.
- Automatically adjusts the Smart Sensor to the ideal distance to the sample surface.
- Smart Communications: email, stream and print data directly.
- Hi-Res full color touch interface with embedded Color Quality Control Software including most common color scales and indices.

# Inline Instruments

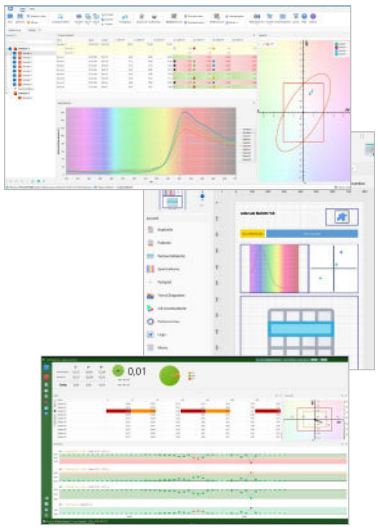
HunterLab **inline color measurement systems** are versatile and can be seamlessly integrated in existing production line for efficient color quality control of textiles, paper, food, plastics, building materials and coating. Real-time continuous color measurement eliminates the need for time-consuming analysis of samples in the laboratory.

**Advantages:**

- Non-contact and continuous measurement during ongoing production.
- Early detection of color differences.
- Constant and reproducible color quality.
- Plug-ins, e.g. for simultaneous recording of external measurement data.
- Permanent monitoring of samples to reduce rejects.
- Fewer complaints and higher productivity.

# System Software

Various software programmes and combinations are available:



**Laboratory:**

- Laboratory software for analysing, archiving and communicating the measured spectral values.
- ER version of the laboratory software for analysing and processing spectral data for all GxP-regulated companies in the pharmaceutical, medical technology or food industries that have to comply with the standards of the US Food and Drug Administration (FDA) Rule 21 CFR Part 11.

**Inline:**

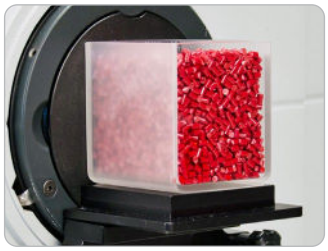
- The software enables centralised acquisition, evaluation and saving of measured values with interfaces to PLC, SPS and network.
- Grouping Module: Sorting and grouping of samples in sequences.

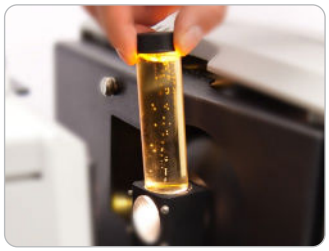
**Network:**

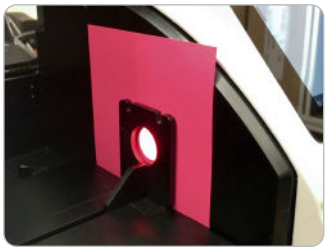
- Networking for the laboratory, production and control centre with simultaneous access to data from several locations and display of production lines.

# Sample Handling

A large selection of port plates, sample cups and matching holders is available for all HunterLab devices. These include glass sample cups, cells or vials in various sizes, disposable plastic cuvettes (for highly adhesive samples), micro cuvettes (for valuable samples), flow-through cells and much more. HunterLab offers individual accessories and sets for every application and every type of sample (solid, liquid or powder).







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OIL
Building Materials
PILLS
Pharma
PREFORMS
Paint & Coating

**About Hunterlab**

HunterLab is the technology leader in color measurement solutions, providing instruments, software, knowledge and service to a wide variety of industries. With over 7 decades of experience in more than 65 countries, HunterLab applies leading edge technology to your products helping you measure and communicate color simply and effectively.



The world's true measure of color
HunterLab

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