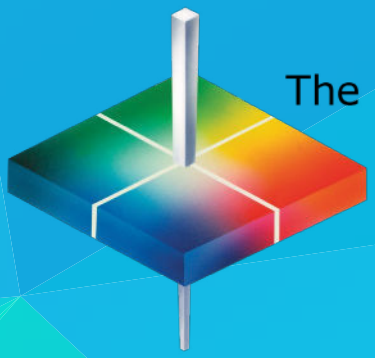


The world's true measure of color

HunterLab

COLOR AND APPEARANCE

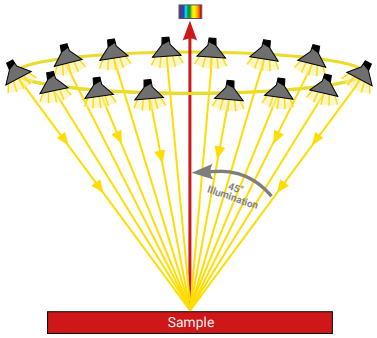
MEASUREMENT SYSTEMS

visit **www.hunterlab.com**

Measurement Systems

The right solution for your industry application

Directional 45°/0°



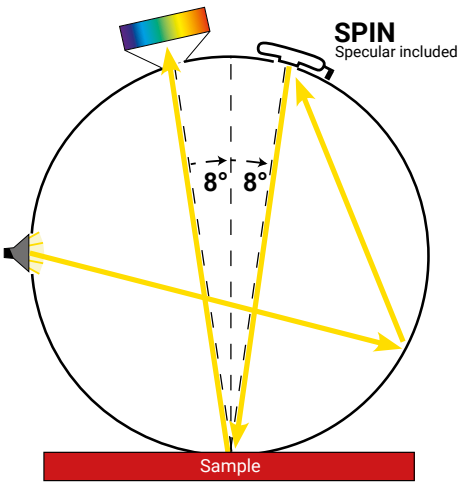
For the sample shown on right, a diffuse d/8°, also called sphere instrument, will tell you that the sample is the same color no matter what texture. An instrument with 45°/0° (or 0°/45°) geometry will indicate that the four corners are different, just like your eye sees it. Which is right? That depends 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.

If you want to know how the sample appears to your customer then the 45°/0° instrument is the most appropriate. A 45°/0° geometry instrument excludes the gloss from the sample (specular excluded) and sees both the effect of the samples coloration and the effect of its gloss or texture. This is how your customer visually sees it.

If you need to know only the samples coloration, then the diffuse d/8° geometry is most appropriate. The diffuse d/8° instrument provides diffuse spherical illumination and 8° viewing conditions, includes the sample glare (specular included) and will only see the effect of sample coloration, ignoring the gloss or texture effect. Its measurements will not always agree with what you see. Some diffuse d/8° instruments have a mode that approximates specular excluded, however measurements in this mode are less precise than those of a 45°/0° instrument.

Diffuse d/8°



Many HunterLab diffuse d/8° sphere instruments can measure light transmitted through transparent samples and some also measure transmission haze. The use of sphere geometry is the most effective way to measure the transmitted color of turbid or hazy samples since measurement errors from light scattering variations are minimized.

PACKAGING
TEXTILE
PAINT&COATING
YARN
PLAQUES
TISSUE
LENSES
METAL
FABRIC
SHEET
PLASTIC
GEL
PAPER
BOTTLES

Diffuse Sphere Geometry Instruments

MiniScan® EZ

diffuse d/8° **reflectance**

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

- **Various Views** displaying color data, color plot, spectral data and spectral plots.
- **Thousands of readings** using 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 professional color measurement spectrophotometer is ideal for precise color measurement of liquids and solids and also transmission haze.

- Wavelength range **350 nm - 1050 nm**
- **5 nm** data interval.
- **Haze** measurements.
- Sample reflectance measurement areas: **25 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.

- **Wavelength range 360 nm - 780 nm**.
- **Haze** conformance measurements per ASTM D1003
- Sample reflectance measurement areas: **25 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 **Haze** conformance measurements per ASTM D1003.

- Simultaneously measures the **transmission color and haze** of liquids and films.
- One-touch standardization and small compact footprint.
- Wavelength range 400 - 700 nm.
- **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 Remote Access Support (RAS) subscription.

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.

- **Various Views** displaying color data, color plot, spectral data and spectral plots.
- **Thousands of readings** using 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® EZ 45°/0° reflectance

A basic, yet flexible, self-contained 45°/0° spectrophotometer that measures reflected color of smooth to slightly textured solids, powders, pastes and liquids.

- **Wavelength range 400 - 700 nm**, with 10 nm data interval.
- Viewed sample area of **25.4 mm** (1 in).
- Requires **very little bench space**.
- Stores up to **1000 measurements**.
- Optional Port for Sample Cup: **64 mm**
- Uses internal software. Can be used with optional EasyMatch® QC software for PC.

Port up/forward

Agera® 0°/45° reflectance

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

- **UV Control and Calibration** for consistent measurement of optically brightened samples.
- Viewed sample area: **51 mm** (2 in), **25.4 mm** (1 in) and **16.9 mm** (5/8 in)
- **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, indices and metrics.
- Including Remote Access Support (RAS) subscription.

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.

- Measures the **largest sample area** of any instrument for the best measurement accuracy and consistency available.
- 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 all common color scales, indices and metrics.
- Including Remote Access Support (RAS) subscription.

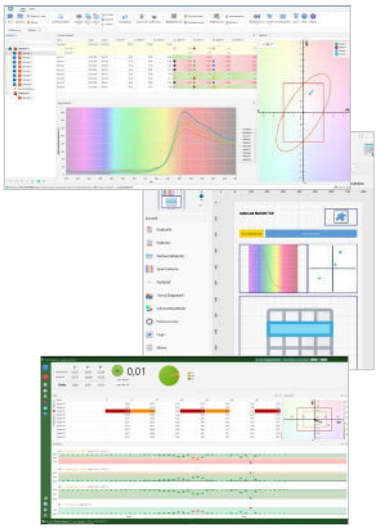
Inline Instruments

HunterLab inline color measurement systems are versatile and can get 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 reduces 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:

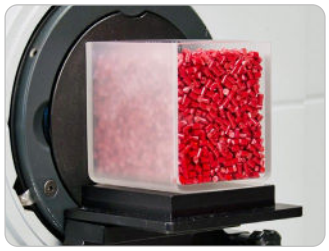
- The software enables centralised acquisition, evaluation and saving of measured values with interfaces to PLC, SPS and network.
- Grouping Module: Sorting and grouping of samples in sequences.

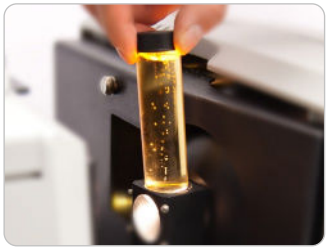
Network:

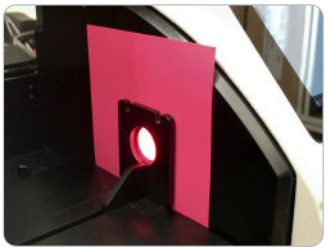
- Software for networking the laboratory, production and control centre with simultaneous access to data from several locations and display of production lines.

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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