



# COLOR<sub>AND</sub> APPEARANCE

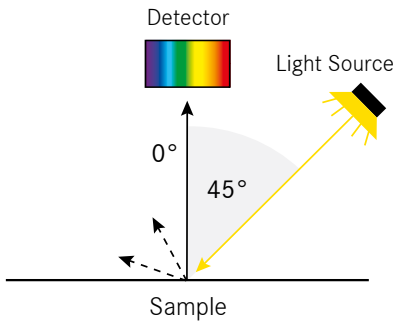
MEASUREMENT SYSTEMS

Measure  
Color  
the way  
your eye  
sees it

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# Measurement Systems

The right solution for your industry application

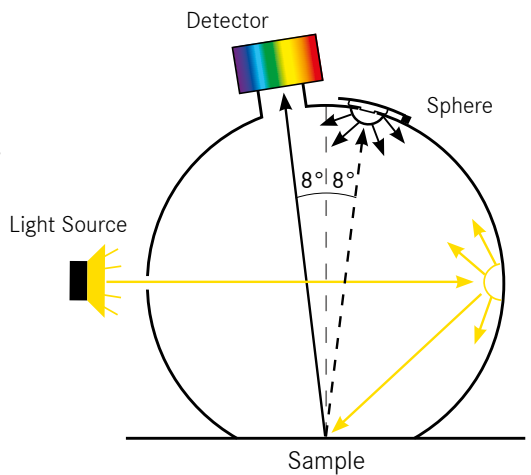


For the blue sample shown beside, a diffuse/8° (also called sphere) geometry instrument will tell you that the sample is the same color on both sides. A 45°/0° (or 0°/45°) geometry instrument will indicate that the halves are different. Which is right? That depends on your need.



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

If you need to know only the sample's coloration, then the diffuse/8° geometry is most appropriate. The diffuse/8° instrument 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/8° instruments have a mode that approximates specular excluded, however measurements in this mode are less precise than those of a 45°/0° instrument.



Many HunterLab diffuse/8° geometry 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  
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 FABRIC LENSES  
 PAPER GEL  
 TEXTILE  
 YARN PLAQUES  
 METAL TISSUE  
 SHEET PLASTIC  
 BOTTLES

# Diffuse Geometry Instruments



## MiniScan® EZ **diffuse/8°**

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

- Displays 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.
- Uses 6.35 cm (2.5 in) sphere.
- Self contained, can be connected to PC for use with optional EasyMatch® QC software.



## UltraScan® PRO **diffuse/8°**

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, with 5 nm data interval.
- Measures reflectance, transmittance and haze.
- Sample reflectance measurement areas: 25 mm (1.00 in), 13 mm (0.50 in) and 7 mm (0.25 in).
- Automated control of Specular Component Included/Excluded, Large and Small Area View lens and UV control filter using supplied fluorescent standard.
- Uses 15.2 cm (6.0 in) sphere.



## UltraScan® VIS **diffuse/8°**

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

- Wavelength range 360 nm - 780 nm, with 10 nm data interval.
- Measures reflectance, transmittance and haze.
- Sample reflectance measurement areas: 25 mm (1.00 in) and 9.5 mm (0.37 in).
- Automated control of Specular Component Included/Excluded, Large and Small Area View lens and UV control filter using optional fluorescent standard.
- Uses 15.2 cm (6.0 in) sphere.



## Vista® **diffuse/0°**

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

- Simultaneously measures the transmission color and haze of liquids and non-opaque films.
- One-touch standardization.
- Wavelength range 400 - 700 nm.
- Multiple data views - color data, color view, spectral data, spectral plot, among others.
- Small compact footprint.
- 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°

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

- Displays 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 connected to PC for use with optional EasyMatch® QC software.



## ColorFlex® EZ 45°/0°

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 mm (1.00 in).
- Requires very little bench space.
- Stores up to 1000 measurements.
- Uses internal software. Can be connected to PC for use with optional EasyMatch® QC software.



## Agera® 0°/45°

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

- Port up or port forward sample measurements.
- UV Control and Calibration for consistent measurement of optically brightened samples.
- Port sizes of 2", 1" and 5/8" provide optimized color and simultaneous ASTM 60-degree gloss measurement results for varying sample sizes and textures.
- Embedded high-resolution 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°

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 most measurement accuracy and consistency available.
- Positions the Smart Sensor to the ideal sample height and automatically adjusts for variations.
- 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, indices and metrics.
- Including Remote Access Support (RAS) subscription.

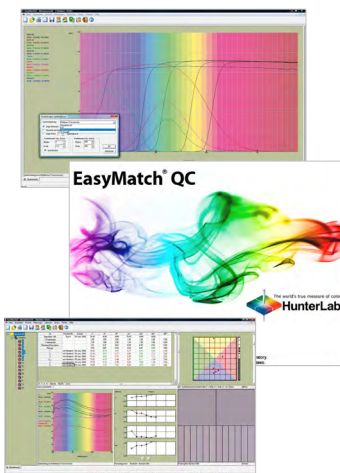
## On-Line Instruments



HunterLab on-line instruments make real time color measurements of your product, without contact or intrusion, as it is being produced. From beginning to end, production runs can be continuously monitored to identify color variation and out-of-spec product. Current applications include:

- **Building Products** - glass, siding, plastic, lumber, insulation and roofing.
- **Food** - processed, baked, fried, and roasted.
- **Paint** - coated aluminum and steel.
- **Paper** - lightweight low opacity paper, coated board, fine paper, and colored/white paper.
- **Plastic** - pellets, film, and extruded sheet products.
- **Textile** - denim dyeing, automotive fabric, carpet, finishing, continuous dyeing for apparel fabrics.
- **Other** - crushed stone, fertilizer.

## System Software

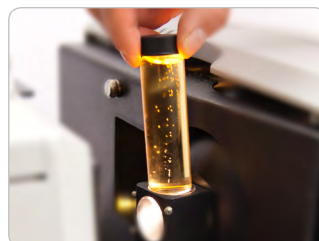


Several software packages are available for use with HunterLab systems.

- **EasyMatch® QC** is a versatile color quality control package that is used with our bench-top and portable spectrophotometers.
- **EasyMatch® QC ER** is a software program that permits communication with a color measurement instrument, measures samples and standards, calculates and displays data, and provides data reports in both printed and electronic formats, while meeting the requirements of 21 CFR 11 into special consideration.
- **EasyGroup Software** sorts and sequences samples of similar shade.
- **EasyMatch® On-Line** is used with our on-line spectrophotometers for real time continuous color measurement. It can be used with up to four sensors through one server computer and to use multiple client computers to communicate with the sensors through the server.

## Sample Handling

Numerous specialized sample handling devices are available to enable optimum sample presentation for a wide range of samples. We will even design a custom device for your specific application.



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Pharma PILLS  
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 5 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.

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