

## Measurement Method

Change of phase of  $\lambda/2$  on reflection  
 $\Delta = 2t + \frac{\lambda}{2}$  (must equal a whole number of  $\lambda$  for a bright fringe or  $\lambda/2$  for a dark fringe)

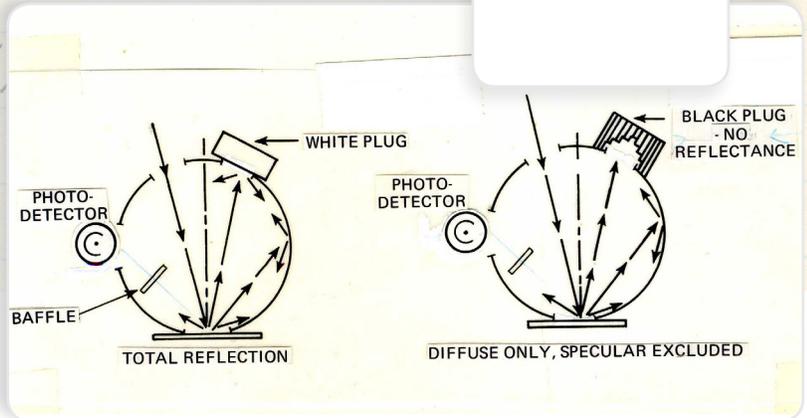
$$n\lambda = 2t + \frac{\lambda}{2}$$

$$t = \frac{n\lambda - \frac{\lambda}{2}}{2} = \frac{\lambda}{2} \left( n - \frac{1}{2} \right)$$

substituting

$$D^2 = 2r \left[ \frac{\lambda}{2} \left( n - \frac{1}{2} \right) \right]$$

MM 5031.00



## Measuring Coated Glass

with UltraScan® VIS

Lot-to-lot or piece-to-piece color consistency is an important indicator of quality for many items, including coated glass or plastic that is used in architectural applications. Pieces of coated glass can be easily measured at the reflectance port of a benchtop sphere instrument such as the UltraScan® VIS.

A HunterLab UltraScan® VIS Diffuse/8° spectrophotometer can be used to measure the coated surface of glass or plastic pieces that are placed over the reflectance port, while negating any transmitted signal from the measurement by backing the sample with the light trap. This method is recommended by HunterLab for the measurement of coated glass and plastic.

### THE APPLICATION

Coated glass and plastic pieces may have several non-uniform characteristics that require compensating preparation and presentation techniques in order to ensure a repeatable sample measurement.

As they are not opaque, these transparent samples exhibit light trapping, and will be sensitive to ambient light and to small differences in the optical path of the instrument. Backing the sample will make the sample effectively opaque and provide a constant background for the measurement.

The samples may be directional, requiring the averaging of several readings with rotation.

Recommended Color Scale

**CIE L\*a\*b\* as a full color descriptor**

Recommended Illuminant/Observer

**D65/10°.**



**UltraScan® VIS**



## MEASUREMENT METHOD

1. Configure your software to read using the desired color scale, illuminant, and observer.
2. Standardize the instrument in Reflectance - Specular Included mode for the largest port size possible for which the sample can completely cover the hole in the port plate. First standardize on the light trap, then the white tile.
3. Center the sample to be measured over the reflectance port. Make sure that the area of the sample to be measured faces the port and completely covers the port.
4. Take a single color reading of the sample. Rotate the sample 90° and read it at least once more. Average the multiple color readings for a single color measurement representing its color. Averaging multiple readings with rotation between readings minimizes measurement variation associated with non-uniformity or texture.
5. Record the average color values.



2.

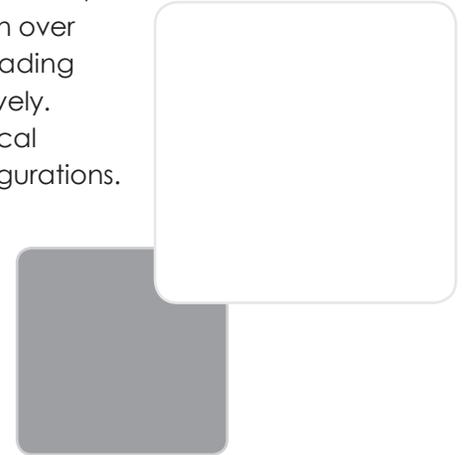


3.

## ABOUT HUNTERLAB

HunterLab, the first name in color measurement, provides ruggedly dependable, consistently accurate, and cost effective color measurement solutions. With over 6 decades of experience in more than 65 countries, HunterLab applies leading edge technology to measure and communicate color simply and effectively. The company offers both diffuse/8° and a complete line of true 45°/0° optical geometry instruments in portable, bench-top and production in-line configurations. HunterLab, the world's true measure of color.

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**More Information about  
Measurement Methods at**

*[hunterlab.com](http://hunterlab.com)*

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