

## Measurement Method

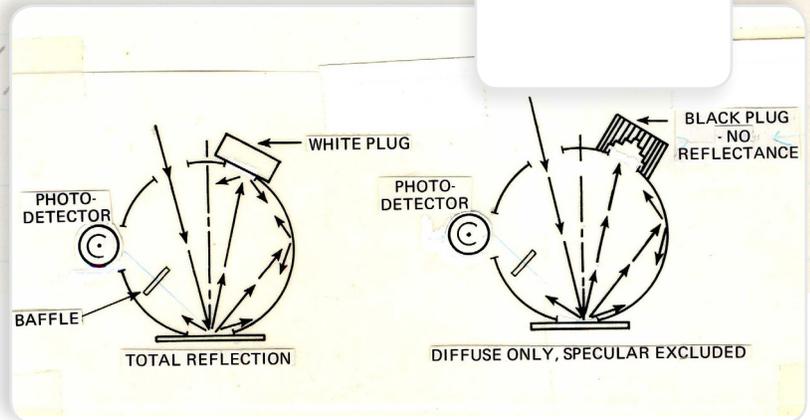
Change of phase of  
 $\Delta = 2t + \frac{\lambda}{2}$  (must equal a whole number of  $\lambda$  for a bright fringe or

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

substituting

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

MM 5067.00



## Measuring Small, Distinct Areas of Large Samples

with UltraScan® PRO

Lot-to-lot or piece-to-piece color consistency is an important indicator of quality for many colored items. Some items may include multiple small areas of color in one sample, however. Care must then be taken to measure only the area of the sample intended to be measured. A special, small sample port can be used to measure a designated small, colored area on a larger sample using a diffuse/8° instrument such as the UltraScan® PRO.

A HunterLab UltraScan® PRO Diffuse/8° spectrophotometer can be used to measure the reflectance of small sample areas carefully positioned over a special, small port plate. This method is recommended by HunterLab for the measurement of small areas on multi-colored samples.

### THE APPLICATION

Smaller areas on larger samples may have several characteristics that require compensating preparation and presentation techniques in order to ensure a repeatable sample measurement.

The samples may be translucent and require a constant backing.

The available measurement area may be very small or not easily differentiated from other colored areas. The proper size port insert must be used to limit the area measured by the instrument.

Recommended Color Scale

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

Recommended Illuminant/Observer

**D65/10°.**



UltraScan® PRO



## MEASUREMENT METHOD

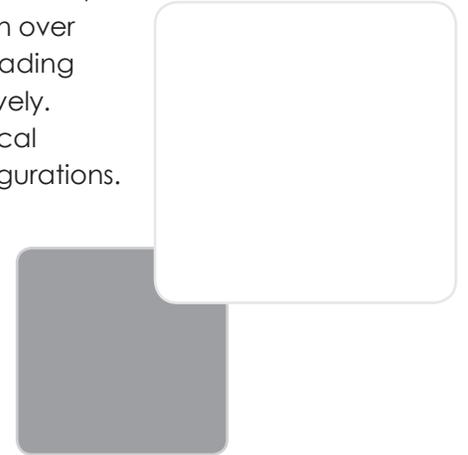
1. Configure your software to read using the desired color scale, illuminant, and observer.
2. Install the small area view port plate and standardize the instrument in RSIN mode for the smallest area view available in your software. If the area of the sample to be measured will not completely cover the hole in this port plate, you may install the 4-mm optional port plate (HunterLab Part Number A02-1011-184) instead. First standardize on the light trap, then the white tile.
3. Place the area of the sample to be measured over the reflectance port and hold it in place using the sample clamp with the white disk installed to back the sample. Make sure that the area of the sample to be measured faces the port and completely covers the port opening. Use the retroviewer, if available, to check that the desired sample area is correctly positioned over the port opening.
4. Take a single color reading of the sample. Rotate the sample 90° or move the sample to another area containing the same color and read it at least once more. Average the multiple color readings for a single color measurement. Averaging multiple readings with rotation or movement between readings allows you to better estimate the color of the designated area(s) as a whole.
5. Record the average color values.



## 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.

© Hunterlab 2012



**More Information about  
Measurement Methods at**

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

**Hunter Associates Laboratory Inc.,**  
11491 Sunset Hills Road, Reston, VA 20190-5280 USA  
[helpdesk@hunterlab.com](mailto:helpdesk@hunterlab.com)  
[www.hunterlab.com](http://www.hunterlab.com)

