

# Applications Note

AN 1098

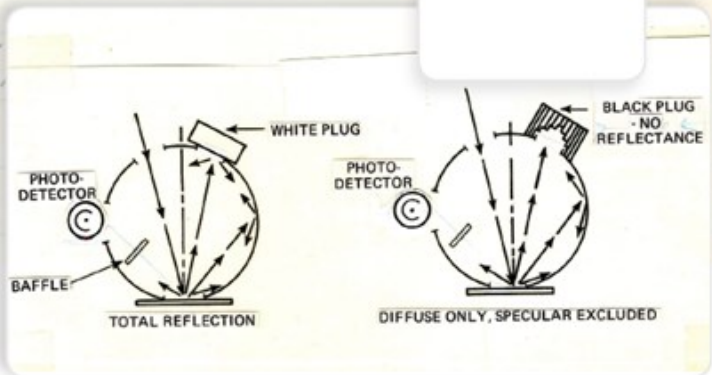
$\Delta = 2t + \frac{\lambda}{2}$  (must equal a whole number of  $\lambda$  for a bright fringe or

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

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

substituting

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



**...opacity card conveniently allows measurement of opacity using first the portion backed by white, then the portion backed by black.**

## Abstract

One of the best ways of measuring the color of paint using your HunterLab instrument is to create a "drawdown" by applying the paint evenly to a card. When the paint on the card is dry, it can then be placed at the instrument's sample port for measurement. This Applications Note provides guidelines on making good drawdowns for consistent and accurate color measurements.

### **Guideline #1: Using a Laboratory Area**

Drawdowns should be made in a clean space where there is no chance of contamination from unwanted paint or particulates while the sample paint is being mixed, applied to the card, or is drying.

### **Guideline #2: Mixing the Paint**

Add the colors to be mixed to the paint container beginning with the largest quantity and working down to the smallest quantity. If it is important that you know the exact amount of each color used, measure the colorants out using an analytical balance (one that measures to at least two decimal places) or a dispensing system that can deliver specific shot sizes. Mix the paint thoroughly, preferably using a motorized mixer. If you are stirring manually, be sure to stir from the bottom upward. The end result should be a fully homogenized paint sample with no lumps or streaks of color.

### **Guideline #3: Using Opacity Cards**

Opacity cards, such as those sold by The Leneta Company ([www.leneta.com](http://www.leneta.com)), provide a flat, solid surface on which paint can be smoothly and evenly applied. These cards have a black portion and a white portion so that when paint is applied over both areas, they can be visually compared as the layers are applied until they appear identical. When the two areas appear the same, then a sufficient opacity of the paint has been achieved. On the other hand, if a completely opaque drawdown cannot be achieved, then the opacity card conveniently allows measurement of opacity using first the portion backed by white, then the portion backed by black.



### **Guideline #4: Applying the Paint**

The paint must be applied to the opacity card in an even coat as soon as possible after mixing. A drawdown bar (as shown above) or spray gun provides the best means of doing this. Follow the instructions given in the user's manual for your device to operate it optimally. Apply enough layers to make the painted area completely opaque, if possible for the paint you are sampling.

After the paint is completely dry, you can measure the drawdown on your instrument as you normally would. If you need help doing so, measurement methods for paint using our various instruments can be found on HunterLab's web site, [www.hunterlab.com](http://www.hunterlab.com).

### **Additional Tips for Color Formulation**

If you are measuring paint for the purpose of performing color formulation you should also consider the following:

- Colorant primaries should be prepared in the same way as your finished product, with all appropriate resins, extenders, and solutions at their normal loading levels using your most commonly-used substrate.

- The components of colorant samples and known standards should be weighed and recorded to two or more decimal places.
- Prepare masstones and white and black letdowns exactly as described in the user's manual for your formulation package.

### **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 our leading edge technology to your products helping you measure and communicate color simply and effectively.

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