

## Applications Note

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

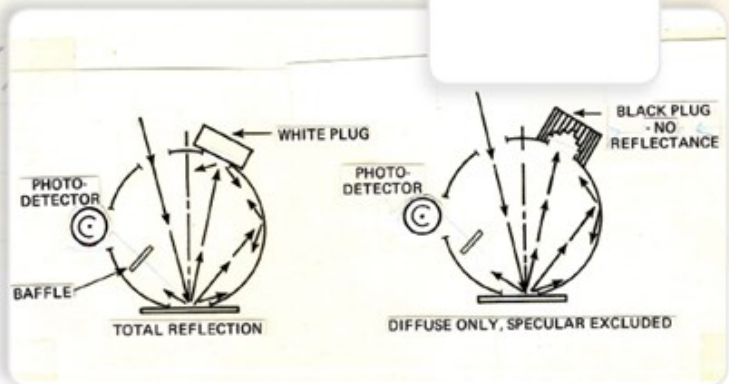
$$n\lambda = 2t + \frac{\lambda}{2}$$

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

substituting

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

AN 1058



## A Matter of Taste: How The Color of Food and Beverage Containers Can Make a Difference

*...use (of) container color to optimize appeal of foods and beverages may significantly enhance consumer interest . . . .*

### Abstract

Eating and drinking are intense multisensory experiences informed by the appearance, aroma, texture, and taste of foods. Color has long been recognized as a central component of how food and drink are perceived. Now, research indicates that product-extrinsic color, specifically the color of containers, also has a significant psychological impact on consumer expectations and consumption habits. By combining color analysis with an understanding of the relationship between container color, perception, and behavior, food and beverage manufacturers can create packaging that maximizes appeal and enhances consumer relationships with their products.

## The Impact of Crockery Color on Coffee Taste

A study published last year examined the impact of mug color on consumer perception of coffee.<sup>1</sup> Research subjects were presented with identical café lattes in either a white ceramic, blue ceramic, or clear glass mug and asked to rate their quality, aroma, bitterness, sweetness, and acceptability. Participants who drank from a white mug were more likely to describe the coffee as more intense and bitter than coffee in clear glass mugs while coffee in the blue mug was perceived as somewhere in between. Participants were more likely to note sweetness in coffee presented in the clear glass and blue mugs and significantly less likely to report sweetness in coffee consumed from the white ceramic mugs. So what explains the difference in perception?

The researchers theorize that ‘it’s not the whiteness of the cups that matters *per se*, but rather the way it brings out the clarity and vividness of the brownness of the coffee, which tends to be associated with bitter flavors.’<sup>2</sup> They also note that those serving coffee should take container color into consideration to enhance consumer experience.



*Lattes served in a white mug is perceived as having a more intense flavor than lattes served in a clear mug. Image Source: Unsplash user Drew Coffman*

## Container Color, Perception and Behavior

Research also indicates that container color plays an important role in the perception of complex foods. A 2013 study found that a *fraisier* dessert with primary yellow, white, and red tones and a vacherin glaze with light pink, white, and cream colors were rated as significantly sweeter, more flavorful, and more appetizing when presented on a white plate versus a black plate.<sup>3</sup> A raspberry and vanilla *fraicheur* with more brown tones, however, was perceived as sweeter, more intense, and more appetizing on a black plate.

But container color doesn’t only affect how food tastes—it can actually impact how *much* food we eat. In a study published in *Appetite*, participants were presented with identical amounts of popcorn and chocolate chips on red, blue, or white plates.<sup>4</sup> After correcting for personal preference, researchers found that



*The color of plates can have a significant impact on both consumer perception and behavior. Image Source: Unsplash user Jay Wennington*

participants ate less popcorn and chocolate when using a red plate. The contrast between the food and plate did not appear to influence behavior; it was something about the color red that altered consumptive habits. Nicola Bruno, author of the study and psychology researcher at the University of Parma in Italy, said,

psychology researcher at the University of Parma in Italy, said, “I expected to find the results related to differences in color intensity, but they did not. It’s really related to the color red.”<sup>5</sup> Except, perhaps, when the food in question is red. Previous research found that test subjects in a buffet line served themselves 22% more pasta with marina sauce when using red plates versus white plates.<sup>6</sup>

## Using Color Analysis to Enhance Food and Beverage Containers







Understanding how use container color to optimize appeal of foods and beverages may significantly enhance consumer interest in and use of your products, particularly if you manufacture goods designed to be consumed directly from the container in which it is sold. Color analysis can help you develop and produce food packaging that increases the palatability of your product and encourages consumption. When a color scheme has been developed, integrating spectrophotometric instrumentation in the production line ensures continuous monitoring to ensure consistent, accurate pigmentation of your container.

**Plastic Containers:** If you are working with plastic packaging, color analysis can be used to measure raw material such as plastic pellets, liquid pigments, and powders prior to extrusion to ensure that you are starting with the right ingredients. Integrating spectrophotometers throughout the manufacturing process, from initial staging to evaluation of final container form, allows you maximum control and quality assurance. Spectrophotometric instrumentation with integrated height measurement guarantees accurate analysis of even heavily textured plastics that present challenges to traditional measuring methodologies.

**Paper Containers:** When it comes to paper containers, spectrophotometric analysis is an ideal option for maintaining consistent pigmentation. The diverse range of geometries available provides precise, accurate color quantification regardless of surface texture, including high- gloss finishes, and can pass/fail pigmentation according to your set tolerance range. In-line spectrophotometric instrumentation from HunterLab allows for unique dye pump connectivity to automate color control in paper production.

HunterLab’s innovative spectrophotometers offer clear, objective color analysis to assure quality, repeatability, and efficiency of container pigmentation. As a pioneer in the field of spectrophotometry, our cutting-edge technologies can allow you to bring your products to new heights.

## References

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## 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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