

This past weekend marked the end of my youngest son's recreational basketball league and like most youth sports teams, we headed to our local pizza parlor to celebrate. Of course with the free range soda fountain, the ever popular "graveyard" soda pick was popularized that evening by none other than my own 8-year-old son. To those of you who are uneducated in the "graveyard" refreshment, it consists of a random selection of all soda fountain choices that when combine create a unique taste and color sensation. As I watched him mix his drink creation, I noticed that the selections have greatly expanded since the original "graveyard" beverage choices from my youth. Not only have the flavor choices expanded, but thanks to the analysis of food dyes in beverages, there are now many more vivid color choices available as well.



The commercial beverage industry utilizes food dye additives to create a rainbow of color choices which appeal to today's market. Image Source: Flickr' user The Kingsway School

From bright colored soda flavors to multi-colored sports drinks and even flavored spirits, today's beverage color selections have far exceeded the normal range of hues. Not only do the unique flavor combinations help sell the product, but the analysis of food dyes in beverages also play an important role in product formulation. With only a limited number of dyes approved by the Food and Drug Administration for use in foods, commercial beverage manufacturers must rely on only seven FD&C dyes to create the entire palette of artificial food colors to formulate the many color choices in today's liquid refreshment selections<sup>1</sup>. Spectrophotometers offer a simple yet effective tool needed to maintain [color consistency and quality](#) in commercial beverages and can simplify the formulation process by quantifying and storing this information for batch-to-batch repeatability.

### **A Better Understanding Color Measurement**

Color measurement varies based on sample type and purpose. The analysis of food dyes in beverages requires specific measurement techniques that are dependent on the sample type and [transparency value of the liquid](#). Color appeal and consistency are critical when factoring in

consumer choice and product acceptance. [Quantifying color intensity](#) is the first step for proper formulation and desired color outcomes.

Spectrophotometers allow for the most precise color measurements. Understanding your spectrophotometer and the unique sample variations can ensure that analysis of food dyes in beverages are accurately quantified for color quality and repeatability.



Understanding the proper color measurement techniques need for various beverages ensures that proper formulation and additives are used effectively to maintain quality. Image Source: Flickr' user iggyshoot

### **Using Color Data for Formulation and Repeatability**

Consistency is essential for consumer acceptance and quality control. Even slight changes or alterations in color formulations can hinder perceived quality. When developing a specific color formulation, it is important to [quantify color changes](#) in relation to food dye additives. This data can then be stored and duplicated from batch to batch and can be transferred to various processing plants without the need for visual comparison. Since even slight color changes can indicate poor quality or unsafe food products, beverage color must be closely monitored to uphold the brand reputation and quality.

Spectrophotometers offer the ability to monitor color additives continually and help develop a color averaging system. Repeated data can then be used to set color standards necessary for formulation and prompt any needed changes. Using real-time color analysis allows for any color variations to be noticed quickly and formulation changes to be addressed in a timely manner, decreasing any wasted resources and improving the profit margin.

### **Color Quality and Consumer Acceptance**

Although taste is an important factor in beverage marketability, many studies show that the [visual appeal of beverages](#) has an even greater effect on consumer choice<sup>2</sup>. Instrumental analysis of food dyes in beverages ensures that both quality and visual recognition are maintained no matter where a product is manufactured or who is performing the color evaluation. Advanced spectrophotometers take the guess work out color formulations and are both simple and easy to use.



Many leading commercial beverage manufacturers rely on advanced spectrophotometers to ensure both quality and consumer appeal. Image Source: Flickr' user J. Triepke

At HunterLab we offer state of the art color measurement instrumentation that is backed by our friendly and knowledgeable support team. We work hard to make sure that you choose the right tool for the job and offer continued support to ensure that you are able to utilize your spectrophotometer to its full potential. For this application, we recommend using the [VISTA Spectrophotometer](#). Unlike typical UV/Vis instruments, the VISTA uses a myriad of sample cells ranging from 1 cm – 5 cm pathlengths and continuous flowthrough cells. HunterLab spectrophotometers are trusted by many of today's beverage industry leaders to offer the functionality and accuracy needed for color quality. For more information on our line of spectrophotometers designed for beverage color analysis, [contact HunterLab today](#).

1. "Analysis of Food Dyes in Beverages", <https://sites.google.com/a/wrps.net/lhs-ap-chemistry/home/lab-resources/lab-1>
2. "Visual appeal or taste, what attracts you to food?", November 26, 2015, [http://www.business-standard.com/article/pti-stories/visual-appeal-or-taste-what-attracts-you-to-food-115112600185\\_1.html](http://www.business-standard.com/article/pti-stories/visual-appeal-or-taste-what-attracts-you-to-food-115112600185_1.html)