

Sitting at the kitchen table and trying to help my nine-year-old son to work through long division is like watching a squirrel trying to run from a pack of wild dogs. Continually wiggling and focusing anywhere but on his paper, it's a wonder that he doesn't slide right off the chair without being duct-taped to it (yes, the thought has crossed my mind). As a responsible parent, I began looking for anything that might be contributing to his lack of focus and never ending energy-supply. At the top of the list were numerous articles that investigated food dye analysis in commercial products for clues as to how excessive coloring additives can greatly impact a child's behavior. I immediately went to my food pantry to identify any hidden culprits.



https://c2.staticflickr.com/6/5593/14381457066_5a693257db_z.jpg Food dye analysis plays an important role in food production quality and safety. Understanding the parameters of both natural and synthetic dyes is an important step in commercial food product development. Image Source: Flickr' University of Exeter

The truth is that food color additives are a common ingredient in most processed foods. Despite "increasing evidence in recent years indicates that the abuse of dyes may cause adverse effects, many kinds of dyes are still widely used due to their low price, high effectiveness, and excellent stability. Therefore, determination of food dyes is important to quality control and control the amount of use permitted"¹. Many commercial food manufacturers rely heavily on colorants and dyes to improve the appearance of their products. Industry leaders know that color can greatly influence both taste perception and consumer acceptability, so color additives take precedence when it comes to product formulation and overall quality. [Monitoring the color intensity of food additives](#) is one of the most important factors in the overall appearance of a food product, yet they must be carefully monitored in order to meet safety standards and regulations. Spectrophotometers are widely used for food dye analysis in commercial products due to the efficient and accurate

measurements they provide and the ability to store this data for careful monitoring and repeatability.

Measurement and Comparison of Natural and Artificial Food Dyes

Food product formulations often include natural or artificial coloring and careful monitoring of these additives is necessary to achieve desired results as well as meet industry standards.

Spectrophotometers provide the ability to accurately measure their color intensity and quantify this information for repeatability. Using the latest technology ensures that food products maintain the same color intensity that the consumer has come to expect.



Spectrophotometric technology not only quantifies food color additives, but can also store this data for product formulation and repeatability. Image Source: frankieleon

Whether using synthetic or natural dyes. All food color additives are regulated by the FDA (Food and Drug Administration)². These regulations divide color additives into two categories: certified and exempt from certification, or as many in the foods industry refer to as “artificial” and “natural” colorants. The artificial colorants consist of lakes and dyes that are identified by the FD&C number classification system. These artificial additives undergo strict compliance and safety regulations, and they are systematically reviewed for safety. In fact, FD & C red #3 was actually removed from the list of safe artificial food colorants in 1990, when it was officially classified as a carcinogen³.

Many manufacturers are making the change from artificial to natural food color additives, but with these changes comes new challenges in meeting consumer color expectations. Although many consumers are demanding natural alternatives, color quality is still the driving force behind commercial food product marketability. As new color formulations arise, it will require FDA approval

regardless of how it is derived. Instrumental analysis is not only important for meeting the FDA regulations on color additives, but it is essential in ensuring that color standards continue to meet consumer expectations. The ability to maintain the color intensity of our food choices without the use of synthetic dyes requires the use of instrumental analysis to meet consumer demands.

The Right Tool for the Job

Color measurement instrumentation already plays an important role in food production and food dye analysis in commercial products. Many regulatory agencies use spectrophotometry to ensure safety and quality in our food products. Spectrophotometers are highly accurate, affordable and take the guess work out of food production and manufacturing. Making the most of your color measurement instrumentation requires an understanding of the various options available, and how they pertain to each specific industry need. For example, baked goods often utilize [caramel color additives](#) and require [non-uniform sample measurement](#) to achieve desired results. Non-contact measurement and specified color measurement geometries can reduce errors and ensure uniformity from batch to batch. Beverage products also have unique measurement needs that pertain to [liquid color measurement](#), whereas solid food products require a completely different approach to accurate color measurement.



Many commercial products rely on spectral technology to achieve desired color results as well as meet industry standards and regulations. Image Source: Flickr' user Sheila Scarborough

Providing the right technology with the support needed to utilize instrumentation to its full capability is what set manufacturers apart from the competition. At HunterLab we offer the best of both worlds. Our expert staff has worked with many of the world's leading commercial food producers to develop color measurement instrumentation that is designed to meet the specific needs and challenges of each industry. We offer unsurpassed customer service and support to help you make the most of your spectrophotometers. For more information on our product options or to learn more about food dye analysis in commercial products, please [contact us](#) today.

1. "Journal of Food and Drug Analysis", September 2015, <http://www.jfda-online.com/article/S1021-9498%2814%2900139-2/fulltext>
2. "Color Additives", 12/13/2014, <https://www.fda.gov/ForIndustry/ColorAdditives/>
3. Food Dyes: A Rainbow of Risks, June 1, 2010, <https://cspinet.org/resource/food-dyes-rainbow-risks>