



Spectrophotometric measurement of food color is a central component of quality assurance protocols in the food industry.

Image Source: Pexels user Ed Gregory

Many of us like to believe that we make food choices based on solid science; we read the labels, consider ingredients, and select items that fit into particular nutritional categories. While it is true that we may be [more educated and health-conscious than ever before](#), research has repeatedly shown that however logical we may believe ourselves to be, our choice of food is still a deeply visceral process in which color shapes our perception of both gustatory experience and nutritional value.¹ As Tiffanie Wen writes, “Color is more important than product labeling and even taste.”² At the same time, food color can be a very real indicator of food quality, giving us vital clues as to what we can expect from a particular item and informing our expectations of both palatability and food safety.

The central role color plays in both our psychological and material experiences of food products makes color measurement one of the most important components of quality assurance protocols in the food industry. Today, virtually all major food producers use spectrophotometric instrumentation within their manufacturing facilities to ensure accurate coloration for both aesthetic and safety purposes. By understanding the spectrophotometric options available to you, you can select the best spectrophotometers for food color analysis throughout your production processes.

<https://youtu.be/FZoN50V45W4>

Portable Spectrophotometers

[Portable spectrophotometers](#) are lightweight, handheld instruments that allow you to capture color measurement in any environment, from the lab to the production line to packaging and shipping departments. While portable instruments used to be limited to single beam configurations, technological advances in dual beam spectrophotometry have allowed HunterLab to integrate dual

beam technology in all of our handheld spectrophotometers, improving accuracy, reliability, and functionality. These sophisticated instruments may be used in both [RSIN and RSEX modes](#) to allow you to capture only the information you want, giving you unprecedented insight into your food products at the touch of a button.

Benchtop Spectrophotometers

[Benchtop spectrophotometers](#) combine flexibility and accuracy in a compact package ideal for laboratory use in both research and process control applications. These versatile instruments are available in a variety of optical geometries and are capable of capturing both reflectance and transmission data with the highest degree of precision, allowing them to be used with a full range of sample types including liquids, powders, and solids. HunterLab's benchtop spectrophotometers incorporate integrated height measurement to account for texture variation, allowing you to analyze nonuniform food products with the highest level of accuracy.

In addition to general purpose benchtop instruments, HunterLab offers three specialized spectrophotometers designed specifically for food color analysis in different areas of the food industry:

- [ColorFlex EZ Citrus](#): This reflectance instrument allows you to easily capture Citrus Number, Citrus Redness, and Citrus Yellowness data in orange juice concentrates, grapefruit juices, and lemon juices. In addition to citrus values, the ColorFlex EZ Citrus is able to analyze virtually any opaque or semi-opaque liquid and may be used with a number of color scales.
- [ColorFlex EZ Coffee](#): The ColorFlex EZ Coffee was designed to [measure the color of roasted coffee grounds](#) and [instant powders](#) to easily produce HunterLab Coffee Color Index (HCCI), SCAA Number, and SCAA Roast Classification data as well as a wide range of other colorimetric and spectral data indexes. In addition to coffee, this instrument may be used to measure a wide range of non-coffee samples, including liquid, semi-solid, solid, and powders.
- [ColorFlex EZ Tomato](#): The ColorFlex EZ Tomato uses 45°/0° geometry to measure tomato color in all fresh and processed forms, including ketchup, catsup, paste, sauce, and juice. The instrument's specialized firmware allows you to easily capture tomato color scale information such as Tomato Paste Score (TPS), Tomato Catsup Score (TCS), Tomato Juice Score (TJS), Lycopene Index, and Fresh Tomato Color Index (FTCI). However, the ColorFlex EZ Tomato is not limited to just tomato product analysis; this sophisticated spectrophotometer may be used to measure non-tomato liquid, semi-solid, powder, and solids on a wide range of color scales.



HunterLab's ColorFlex EZ Coffee allows you to capture the color of ground coffee with the highest level of accuracy and precision.

Image Source: Pexels user eliasfalla

On-Line Spectrophotometers

[On-line spectrophotometers](#) continuously monitor food products in a production line and provide real-time feedback regarding color quality, allowing operators to instantly respond to unwanted color changes and limit defective product. By replacing traditional interval-based spot checks, on-line instruments offer the highest level of quality assurance throughout the manufacturing process, reducing labor costs and preventing the release of out-of-spec food products. HunterLab's [SpectraTrend HT](#) uses non-contact, 0°/30° configuration with integrated height measurement to allow for analysis of textured and non-uniform samples without the need for time-consuming and laborious sample prep. As a result, the SpectraTrend HT is able to capture accurate, reliable color information for a broad range of product types and is ideally suited for use in the food industry, where color can have significant implications for [consumer perception of edibles](#) as well as [health and safety](#).

HunterLab for Food Color Analysis

HunterLab has been a pioneer in color measurement for over 60 years. Our commitment to ongoing innovation and technological excellence has allowed us to develop a comprehensive range of spectrophotometric instruments ideally suited to analyzing the color of all food samples. Today, our products are renowned throughout the food industry for their extraordinary accuracy and ease of use, giving food producers the highest level of color quality control to enhance both consumer perception and food safety. [Contact us](#) today to learn more about our dynamic range of portable,

benchtop, and on-line instruments or for assistance selecting the perfect spectrophotometer for your needs.

1. "The Effects of Food Color on Perceived Flavor," 2000,
http://www.jstor.org/stable/40470017?seq=1#page_scan_tab_contents
2. "Food Color Trumps Flavor," September 30,
2014, <http://www.theatlantic.com/health/archive/2014/09/food-color-trumps-flavor/380743/>