

It may be hard to imagine now, but there was a time in the not-so-distant past when yogurt was not considered a trendy food, and variety meant carrying strawberry *and* blueberry. Then came Greek yogurt. Yes, you have technically been able to buy Greek yogurt for years, but in 2007 it represented only 1% of the US yogurt market. Now, that number is over 50% and growing.<sup>1</sup> According to Technavio, which predicts the value of the U.S. Greek yogurt market to reach \$4 billion by 2019, “The introduction of new flavors, novel packaging, and new technologies will prove to be instrumental in increasing the demand for Greek yogurt in the years to come.”

But while Greek yogurt may have made yogurt cool, it also opened the door for expansion of the yogurt market in general. “It’s clear that this is no longer a ‘business as usual’ category,” Chris Solly, CEO of Ehrmann USA said in 2013. “Brands are looking for new ways to continue driving consumption, private label supply is tight but growing, and retailers are in a position of having more options than available space. It is clear that brands need to bring true innovation to the category to maintain consumer interest.”<sup>2</sup> Today, yogurt manufacturers have answered that call by introducing an incredible variety of new products, including “exotic, indulgent and savory flavors, limited-edition products, mix-ins, superfoods, grass-fed and whole milk, stand-up pouches, edible packaging, and others.”

The explosion of yogurt has driven standards for product appearance, particularly color, to all-time highs; consumers are more discerning than ever and have virtually endless alternative choices if a specific brand doesn’t live up to their expectations. As the stakes rise, yogurt quality control is taking on newfound importance in the production process and an increasing number of manufacturers are turning to spectrophotometric color analysis to ensure products meet the high standards of today’s buyers.



Consumer

concerns about artificial dyes are leading yogurt manufacturers to look toward more natural methods of imbuing products with desirable hues.

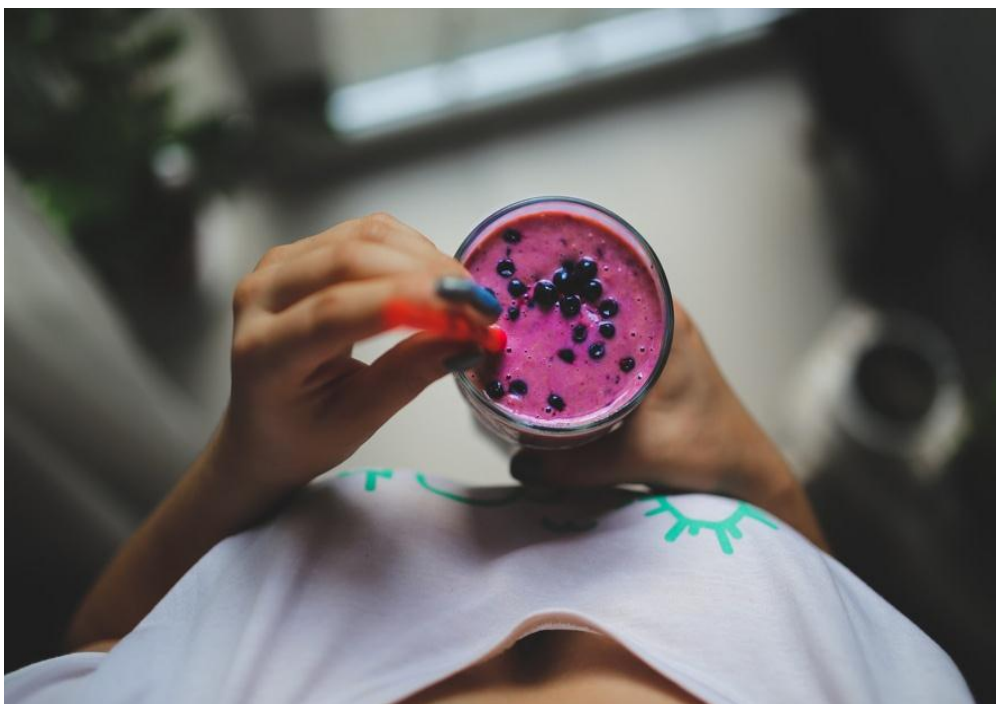
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## Challenges in Yogurt Color

Creating desirable yogurt colors can be a challenging business, particularly as [consumers increasingly reject artificial colorants](#) and controversial dyes. This was most notably demonstrated when Dannon made headlines across the country for using carmine to lend a pink hue to their products. “[W]hen I buy strawberry yogurt I’m expecting yogurt and strawberries, and not red dye made from bugs,” said Michael F. Jacobson, executive director of the Center for Science in the Public Interest. “Given the fact that it causes allergic reactions in some people, and that it’s easy to use safer, plant-based colors, why would Dannon use it at all?”<sup>3</sup>

Jacobson may be correct in questioning the wisdom of [including such a divisive ingredient](#) considering the current public environment, but he overestimates the ease of using plant-based colors. “Unlike artificial colors, color derived from natural sources are very specific to an application,” says Rajesh Cherian of Roha. “This is because their stability is heavily influenced by factors such as acidity, process temperature, interaction with other additives, and exposure to light. Working with colors from natural origins can be challenging due to issues like fading, browning, bleeding, and even flavor changes.”<sup>4</sup>

This is of heightened concern at a time when clear glass and plastic packaging are growing in popularity within the yogurt market. As Donna Berry points out, “Sometimes the clear view may be deleterious to the product’s appearance, as light accelerates color oxidation. This is particularly true with fruit preps used in yogurt products.” As more and more yogurt manufacturers move toward natural colorants and clear packaging, precise color monitoring is becoming more important than ever before.



Spectrophotometric color measurement plays a critical role in yogurt quality control. Image Source: Pexels user kaboompics.com

### The Benefit of Spectrophotometry for Yogurt Quality Control

Spectrophotometers are [designed to measure color the way the eye sees it](#), replacing subjective and unreliable visual assessment with objective technology. Through spectral analysis, these

remarkable instruments are able to distill color information to hard data, allowing prepared food manufacturers to [precisely quantify product appearance](#) and detect unwanted variation of both raw and finished product. By creating individual color standards for each product, yogurt manufacturers are able to easily confirm that each product adheres to expectations throughout the manufacturing process as well as evaluate color stability over time to ensure that products stay appealing to customers at home.

Spectrophotometers also play an essential role in the development and assessment of new yogurt products, ingredients, and processing methods, particularly as public demand for more natural products and governmental regulation of artificial colorants change the landscape of yogurt production. Innovative new materials and processes are already being investigated to allow yogurt manufacturers to achieve the colors and color stability they want without resorting to controversial ingredients.<sup>5</sup> As the industry continues to grow, the data provided by spectrophotometric evaluation will be key to establishing new standards for yogurt quality.

#### HunterLab Quality

HunterLab has been at the forefront of innovation in spectrophotometry for over 60 years. Today, we offer a comprehensive range of [portable, benchtop, and inline instruments](#) developed to meet the diverse and changing needs of our customers in the food industry. By combining state-of-the-art hardware with top-of-the-line software packages, HunterLab offers yogurt manufacturers unprecedented insight and control to create the highest quality products. [Contact us](#) to learn more about our renowned instruments and world-class customer support services and let us help you find the perfect tools for your color measurement needs.

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2. "The Yogurt Wars", April 13, 2013, <http://www.forbes.com/sites/marketshare/2013/04/13/the-yogurt-wars/#7eea104746d3>
3. "Dannon Uses Bugs in Red Yogurt, Carmine Dye Contains Crushed Cochineal Insects.", July 26, 2013, <http://www.ibtimes.com/dannon-uses-bugs-red-yogurt-carmine-dye-contains-crushed-cochineal-insects-1361375>
4. "Color Considerations For Dairy Products", December 4, 2013, [http://www.foodbusinessnews.net/articles/news\\_home/Supplier-Innovations/2013/12/Color\\_considerations\\_for\\_dairy.aspx?ID=%7BC4690A44-9EFC-4936-9400-DBD691125AE4%7D&cck=1](http://www.foodbusinessnews.net/articles/news_home/Supplier-Innovations/2013/12/Color_considerations_for_dairy.aspx?ID=%7BC4690A44-9EFC-4936-9400-DBD691125AE4%7D&cck=1)
5. "Stability of Astaxanthin in Yogurt Used to Simulate Apricot Color, Under Refrigeration", July/September 2014, [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0101-20612014000300018](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0101-20612014000300018)