

October is National Tomato Month and to honor the occasion, wellness company Lycored set out to create a record-breaking 1000-pound tomato salad in the middle of Times Square. Featuring 132 types of tomatoes in a rainbow of hues, the salad presented the largest variety of tomatoes ever assembled in a single location. And yet, even this vast array represents only a small proportion of the ever-expanding number of tomato varieties in existence.

The diversity of tomatoes and dedication to creating new varieties speaks to the global, cross-cultural appeal of the fruit. As horticulturalist and tomato-expert Monica Ozores-Hampton says, “People have these romantic ideas about tomatoes. People always have a story about that favorite soup or pizza and they yearn for the tomato. There is not one culture that doesn’t have tomato as a centerpiece of their culture’s cuisine.” ¹ Given the central role tomatoes play in the dining experiences of people across the world, it is no surprise that spectrophotometric quality control is paramount to producers of both fresh and processed tomatoes.

Spectrophotometric Grading of Tomato Products

While raw tomatoes come in a wide variety of colors and flavors, USDA grading of tomato products such as pastes, sauces, ketchups, and juices depends on adherence to specific color standards to indicate quality. Each grade has exact color ranges and where a product falls within that range can have a significant impact on consumer perception and success in the marketplace. Although archaic visual comparison methods are still in use, [spectrophotometry has long been utilized to provide more precise grading and the USDA is now encouraging producers to turn to electronic color measurement](#). HunterLab’s spectrophotometric instruments and conversion formulas are recognized by the USDA as the premiere tools available for color classification of tomato products.

Although a number of multi-purpose HunterLab instruments meet the criteria for tomato evaluation reliability, we also produce a dedicated tomato spectrophotometer: the [ColorFlex EZ Tomato](#). By combining optimal 45°/0° geometry with specialized firmware for the analysis of fresh and processed tomatoes, the ColorFlex EZ Tomato allows for easy determination of tomato color classification. Scales include:

- Fresh Tomato Index (FTCI)
- Tomato Paste Score (TPS)
- Tomato Sauce Score (TSS)
- Tomato Catsup Score (TCS)
- Tomato Juice Score (TJS)
- a/b ratio

HunterLab also offers a tomato tile to ensure accurate, repeatable measurement over time and hitch standardization between instruments, optimizing tomato color analysis and grading throughout production. In addition to measuring processed tomato products, [raw tomatoes may also be measured to indicate ripeness, freshness, and overall quality](#).

Spectrophotometry for Lycopene Measurement

The color changes that occur during the ripening of tomatoes are the result of falling chlorophyll levels and increasing carotenoids. The primary carotenoid in tomatoes is lycopene, a chemical renowned for its health benefits and the central component in creating tomatoes’ rich, red hue. Lycopene levels are not static, but vary depending on tomato type and growing conditions and have a direct relationship to the color of the fruit. Spectrophotometric instrumentation provides a highly reliable method of measuring lycopene concentration in both fresh tomatoes and tomato products by quantifying colorimetric data to produce a

Lycopene Index number. ² HunterLab's sophisticated CFEZ Tomato firmware offers the most precise Lycopene Index calculation using Hunter a and b color values gained via a directional 45°/0° geometry instrument.

Full article with photos available here:

<https://www.hunterlab.com/blog/color-food-industry/color-classification-utilizing-spectrophotometry-for-analysis-and-grading-of-tomato-products/>