Color consistency in ketchup is an essential part of ensuring product appeal. Image Source: Unsplash user Dennis Klein

“Please, sir,” says the kid at counter. “You’re making a scene.” Spittle flecking from his lips, the ketchup bottle straining in his hand, Jeremy roars out: “I’m not making a scene! You’re the one who’s making a scene! You’re making a scene by not giving me my money back! What kind of store is this?!” Nervously, his eyes darting wildly to try and find his supervisor, the kid stammers “It’s a grocery store, sir.” “No it isn’t!” cries Jeremy. “This is a fake store! That sells fake ketchup! Fake, orange, ketchup! I didn’t want orange ketchup, I wanted real ketchup! Now give me my money back!” As the kid starts to mumble something about store policy, Jeremy cuts him off to yell: “Then let me talk to your supervisor! Where are they?!” “I wish I knew, sir,” says the kid.

Brand Consistency Safeguards Ketchup Manufacturer’s Reputation

Bottle after bottle, hot dog after hot dog, customers expect ketchup to be the same shade of red. For manufacturers, that makes brand consistency an essential element of the manufacturing process. Even before taste, color will be the first impression a customer has of a ketchup product. If that ketchup is off-color, the customer is likely to notice immediately. This can cause concern among customers, even if the flavor remains the same as ever. Such a concern, even in passing, may lead to negative word of mouth as the customer tells their friends about the interesting bottle of ketchup they found. Negative word of mouth can create a negative brand impression, and may lead the original customer or their friends to select a different brand of ketchup the next time they go shopping.

The largest reason for off-color ketchup batches is poor quality tomatoes.[1] As tomatoes are the primary ingredient in ketchup, their color has a great effect on the color of the final product. Tomatoes can be discolored due to a deficiency in the carotenoids lycopene or beta-carotene caused by poor growing conditions, or illnesses such as yellow shoulder disorder.[2] While tomatoes should

be screened before being used in ketchup, those of mediocre quality may make it past the screening process. Contamination during the manufacturing process can also cause ketchup discoloration.

Spectrophotometers ensure accurate, precise, and rapid ketchup color measurement to facilitate color consistency. Image Source: Flickr user Garry Knight

Spectrophotometers Ensure Color Consistency

To ensure brand consistency, ketchup manufacturers include color quality testing in their quality assurance processes. By assessing a representative amount of their ketchup batches for color consistency, they are able to ensure that each bottle of ketchup produced will emit the same color ketchup. To accomplish this, manufacturers turn to spectrophotometers, instruments designed specifically to rapidly determine the color of solid, liquid, and ketchup objects. Spectrophotometers measure color by reflecting controlled bursts of light off objects, and collecting and analyzing the light that returns. The entire process, from inserting a sample to reading the results, takes a matter of seconds.

Spectrophotometers Outperform Human Color Observers

Human technicians are a necessary and important part of the color quality control process. They prepare the sample and the instrument, interpret the data, and decide from there the best course of action to take. However, when it comes to actually determining the color of ketchup, spectrophotometric measurements are far superior to human eyesight. These instruments are standardized, so that each spectrophotometer will return the same results across years of measurement. Unfortunately, human eyesight is not nearly as consistent year to year, or person to person. Also, spectrophotometers are able to convert color into numerical values. These values can then be compared to a predetermined standard, also expressed numerically. This allows for greater descriptive specificity and repeatability than human observers can accomplish, as humans **lack the language** to discern or describe colors with decimal accuracy.

Spectrophotometers also save labor by streamlining the documentation process. Instead of relying on paperwork filled out by quality control technicians, these instruments can store the results of their tests directly to a company's server. This eliminates the need to record and upload quality testing data, saving time on a daily basis.

HunterLab's ColorFlex EZ Tomato is specifically designed to measure tomato color in every form. Image Source: Unsplash user Roychan Kruawan

Color Flex EZ Tomato Provides Industry-Specific Data

Over our six decades of working to ensure color quality control in partnership with the food industry, HunterLab realized the need for a spectrophotometer designed specifically to measure tomato color. The ColorFlex EZ Tomato provides industry-leading color measurement accuracy and repeatability. Further, it comes equipped with industry standard tomato color scales, including the Tomato Catsup Score, (TCS), used for measuring and recording the color of ketchup. Should your company make more than one tomato product, the ColorFlex also has scales for tomato paste, tomato sauce, tomato juice, fresh tomatoes, and a range of non-tomato liquid, semi-solids, powders, and solids. **Contact us** to learn more about how the ColorFlex EZ Tomato can improve your ketchup manufacturing processes and help you create the highest quality products.

1. "Color Quality of Tomato Products", 2008,

   http://ucanr.edu/sites/zann_test/files/28712.pdf

2. "TACT proves accurate, user-friendly in digital image analysis of color in fruits, vegetables", February 24, 2009,
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