



Companies must employ color quality assurance to ensure millions of pencils are all the same color. Image Credit: Unsplash User Neven Krcmarek

Colored pencils are used by a variety of customers, ranging from professional artists who depend on colored pencils for their creative work to the millions of children who use colored pencils for school and play. To meet the needs and earn the trust of all users, manufacturers must integrate spectrophotometers in their quality control protocols to ensure an impeccable record of color consistency.

#### Colored Pencil Users Demand Color Consistency

Like any craftsmen, artists rely on their tools for their livelihoods. For those working with colored pencils to create artwork for direct sale, illustrations, marketing materials, or for other creative purposes, the quality of the pencils they choose has a direct impact on the quality of their work. Not only do they expect each new box of pencils they buy to be the same color as the last—they depend on it. As a result, manufacturers of colored pencils turn to spectrophotometers to ensure that each pencil they produce is exactly the color they intend it to be.

Of course, many users of colored pencils are not professional artists. In fact, the largest demographic among colored pencil users is children, for whom colored pencils provide new opportunities for experimentation and expression. Children, naturally, do not rely on their artwork to put food on the table (or to buy more art supplies); instead, they depend on their parents or teachers. What, then, convinces parents and teachers to choose one box of colored pencils over another? Brand recognition, founded upon the impression of quality. This impression of quality is largely [built upon product consistency](#). Because color is the most noticeable attribute of colored pencils, color consistency is a vital driver of sales. As such, manufacturers employ advanced spectrophotometric technologies to reliably produce the perfect hues.



Artists depend on high-quality colored pencils for the livelihoods. Image Credit: Unsplash user Mari Pi

#### Spectrophotometry Detects Errors in Pencil Production

While colored pencils typically only require four ingredients to color their “lead” (extenders, binders, pigments, and water), inaccuracies in the production process or impurities in the raw materials can lead to off-color batches of pencils being produced.<sup>4</sup> To control for this possibility and avoid defective product, manufacturers can analyze these materials spectrophotometrically prior to mixing. However, raw materials are not the only factor that can result in improper coloration. Incorrect temperature during mixing, inadequate mixing duration, and contamination of the mixing vat can all cause issues in final coloration.

To ensure that each batch of lead is the proper color before removing it from the mixing vat, manufacturers can test samples using spectrophotometric color analysis for the highest level of color quality control. By testing samples of raw and mixed materials, manufacturers save time, energy, and, ultimately, money by catching any off-color batches before they are pressed and rolled into cartridges, assembled into pencils, or packaged and shipped to distributors. Using the data provided by spectrophotometric instrumentation, manufacturers are able to rapidly identify and correct production problems to minimize waste and ensure that only products with accurate pigmentation are released into the marketplace.



Slight inaccuracies in production can result in incorrectly colored pencils. Image Credit: Unsplash User Joe Shillington

#### Rapid Spectrophotometric Measurement Maintains Production Efficiency

Although integrating spectrophotometric analysis in your quality assurance process may add extra steps to pencil production, the minor loss of time is more than offset by the efficiency gains won by the significant reduction of off-color batches. Modern spectrophotometers are specifically designed for ease of use and rapid measurement in industrial settings. To insert, measure, and remove each sample takes a matter of seconds, [even in benchtop models](#). The instrument visually displays pass/fail information, allowing technicians to rapidly determine sample quality. Technicians can also easily switch from [one color standard to another](#) by selecting from value sets saved in the memory of the instrument itself.

Because spectrophotometers assign color numerical values, value sets saved in the memory of each spectrophotometric instrument are easily shared between different instruments. This allows them to be communicated from lab to lab, and facility to facility. For companies producing colored pencils in multiple locations, or even multiple countries, this capability facilitates highly accurate product consistency in a manner that would otherwise not be possible. It also creates a database of historical data, allowing companies to easily recreate colors that have since gone out of production for special production runs.

#### The HunterLab Difference

HunterLab has a pioneer in the field of spectrophotometry for nearly sixty-five years. In that time, we've worked closely with many of the leading producers of colored pencils and [other art supplies](#) to address the unique color measurement challenges inherent to the industry. Today, we offer a comprehensive range of user-friendly instruments that bring your color quality control capabilities to

new heights. To learn more about what makes our spectrophotometers a shade better than the rest, [contact our color professionals today](#).

1. "Can You Tell Me How Crayola Colored Pencils Are Made?", 2017, <http://www.crayola.com/faq/your-business/can-you-tell-me-how-crayola-colored-pencils-are-made/>