



The color of plastics plays a critical role in both aesthetic appeal and practical functionality. Image Source: Pexels user Pixabay

Plastics have changed the course of human history. From cars, to film, to electrification, plastics have been essential to the development of revolutionary products and have shaped the way we live, work, and play.¹ Renowned for their durability, longevity, and versatility, plastics are now integrated into a virtually endless number of industrial and consumer goods.

Part of what makes plastics so attractive has been their ability to take on a broad spectrum of hues. Indeed, the color of plastics is vital to ensuring both aesthetic appeal and practical functionality.² As such, color accuracy and consistency are among the most important aspects of [plastic manufacturing](#), and spectrophotometers must therefore play a central role in the production process. However, just as plastics themselves have advanced over the years, so too have spectrophotometric technologies. While [spectrophotometric color measurement](#) of plastics was once only possible via period manual sampling, on-line instruments are now revolutionizing how color is monitored within the production line. The benefits of on-line spectrophotometers include not only a higher level of quality control, but also improved efficiency of manufacturing and reduced production costs.

Of course, not all on-line spectrophotometers are created equal. HunterLab's [SpectraTrend HT](#) represents the most advanced on-line instrumentation available, offering unmatched versatility and performance in a user-friendly design. By combining continuous, non-contact color assessment with [integrated height measurement](#), the SpectraTrend HT allows you to capture reliable color data from even non-uniform and textured samples without manual sample prep. As such, this innovative spectrophotometer provides solutions to a number of important color challenges faced by the plastics industry, paving the way for better color quality control and enhanced manufacturing practices.



Maintaining color consistency within and between batches is essential to producing the highest quality products. Image Source: Unsplash user Iker Urteaga

Enhanced Product Quality

Maintaining color consistency in plastics can be a difficult process, and color variation may arise from multiple variables. As such, instrumental color measurement is essential to ensuring color accuracy and consistency both within and between batches. Unfortunately, time interval-based quality control runs the risk of missing out-of-spec product and allowing such products to be released into the marketplace. Additionally, such methods have often required precise sample preparation, particularly of textured and non-uniform samples, leaving room for operator inconsistency and error.

The SpectraTrend HT offers real-time monitoring that ensures color is behaving according to expectation at critical points in the production process. Because this process is digitized and automated, the human element is removed, eliminating the risk of operator variation and significantly increasing reliability of measurement. By alerting operators to unwanted color variation instantly, out-of-spec product can be automatically contained downstream, preventing it from reaching customers. This ensures that only the highest quality products enter the marketplace, thus preserving brand reputation and customer satisfaction.

Reduced Color Changeover Time

Spectrophotometers have been instrumental in improving [the color changeover process](#) by identifying when new colors come into spec. However, historically this process has also relied on manual, time interval-based testing. Unfortunately, this method typically causes operators to miss the precise moment of successful changeover, resulting in unnecessary scrap and lost production time.

The SpectraTrend HT, however, replaces time interval-based testing with continuous monitoring, instantly identifying the last good piece of the old color and the first good piece of the new color. This level of precision can reduce color changeover time and scrap by 50% or more. At a moment when just-in-time manufacturing is becoming standard practice, a more efficient color changeover process can have a significant impact on production speed, accuracy, and the bottom line.



The SpectraTrend HT allows you to analyze historical data to improve efficiency and make smart decisions regarding future production changes. Image Source: JJ Ying

Improved Efficiency

Color changeover is not the only point of vulnerability for inefficiency. Identifying any out-of-spec product as early as possible at any point in the manufacturing process is essential to minimizing material waste. However, material waste is not the only concern; wasted labor spent on defective product or rework can result in reduced overall efficiency and significant costs.

When the SpectraTrend HT detects unwanted color variation, operators have the opportunity to take corrective action as quickly as possible. By identifying the source of the problem early and resolving it, material and labor waste are both minimized, thereby improving efficiency and guarding against unnecessary losses.

However, the SpectraTrend HT doesn't only improve efficiency in the moment. Rather, its [integrated software](#) allows for long-term data collection that gives you a broader picture of your manufacturing processes. This data can be used to gain a deeper understanding of the variables that impact your color production, identify opportunities for improved efficiencies in your current manufacturing

process, and plan for changes ahead. As such, it allows you to optimize efficiency on both the micro and macro scales.

HunterLab Innovation

HunterLab has been a pioneer in spectrophotometric color measurement for over 60 years. Today, we offer [a comprehensive range of spectrophotometers](#) ideally suited to the needs of the plastics industry. For many of our customers, the SpectraTrend HT on-line spectrophotometer presents exciting new possibilities for creating the highest quality products possible while realizing meaningful cost savings and creating a more efficient overall operation. [Contact us](#) to learn more about our renowned instruments and let us help you select the right tools for your needs.



1. "A Brief History of Plastics, Natural and Synthetic", May 17, 2014, <http://www.bbc.com/news/magazine-27442625>
2. "Applications and Societal Benefits of Plastics", July 27, 2009, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2873019/>