

The automotive industry is booming. Light vehicle production is on the rise as new features start to push the boundaries of design. Statistics show that “plastics and polymer composites [are] essential to a wide range of safety and performance breakthroughs in today’s cars, minivans, pickups and SUVs. In fact, the use of plastic and polymer composites in light vehicles has increased from less than 20 pounds per vehicle in 1960 to 329 pounds per car in 2014”¹.

With this growth comes an increased need for plastic composites in virtually every shape, size, and color—as well as a method of ensuring their quality and safety.



New automotive features rely on the color quality of plastic composites to meet consumer demands. Image Source: Flickr user spe.automotive (CC BY [2.0](#))

Light vehicle production starts with superior materials, of course. But ensuring the color quality of the plastic composites used in cars is a step-by-step process that requires continual monitoring of colorants and other additives. Spectrophotometric technology offers the versatility needed to analyze these composites from beginning to end, all in one tool.

Monitoring Colorants and Additives Throughout Production

End-use composites depend on quality control instrumentation to maintain [color stability](#) in their raw form and to monitor changes when additives are used. But masterbatch concentrates, compounders, liquid colors, and dry colors all vary in texture and consistency, which can make accurate color measurement challenging².

As a result, when choosing color measurement instrumentation, versatility is one of the most important factors to consider. Advanced spectrophotometers are actually intended to accommodate the wide variation among plastic samples—they have features designed to work with many textures, shapes, and finishes. New technology also offers spectrophotometers the ability to provide continual measurements and develop a [color average](#), something necessary for modern quality control.

And whether you're looking to measure liquid color additives, dry color additives, or [high heat samples](#), specific model options are available to ensure both the color consistency and color matching necessary in the automotive industry.



Plastic composite car parts can come from a variety of sources. Manage color differences and developing color standards is the first step toward improving final quality. Image Source: Flickr user Mic (CC BY [2.0](#))

Custom Color Matching

Automotive consumers are often willing to pay a lot of money for design elements that feature complex color palettes or varying textures. And from high gloss or metallic colors to matte finishes, plastic composites are now taking the place of many alternate materials.

But consumers also expect a high level of quality, which means that the color matching of specialty paints and coatings must coordinate with the plastic composite materials now being used in vehicle manufacturing. Each stage of plastic production creates yet another challenge in maintaining consistency—and requires increasingly advanced color analysis to eliminate costly variations. [Developing a color tolerance](#) sets the parameters for acceptable color quality and helps reduce the types of errors that can lead to product rejection.

Colorants allow for even more options in plastic composite design and continue to drive industry standards to new levels. But these additives require careful analysis to ensure final quality. Color stability must be carefully monitored throughout the processing phases, as even slight changes in heat control and color dispersion can alter the final outcome. These slight variations, when

compounded throughout the various stages of production, can lead to unacceptable differences in final color quality.

Fortunately, spectrophotometers offer the ability to quantify color changes that are otherwise undetectable to the human eye. Developing tolerance standards and understanding color data is the first step towards increasing production efficiency and the final color quality of plastic composites.



Metallic and high-gloss finishes require specially calibrated instrumentation to develop accurate color measurement data. Image Source: Flickr user Mic (CC BY [2.0](#))

Innovative Color Technology

Spectrophotometers continue to lead the industry in color measurement technology for polymer materials. From real-time process automation technology to colorant distribution analysis and color tolerance development, spectrophotometers offer the versatility needed to meet the demands of a competitive market.

HunterLab is a trusted name in innovation and offers exceptional color measurement tools. As industry needs shift, our technology continues to expand to meet these new challenges. We work with leading polymer producers to develop spectrophotometers that can adapt to the demands of automotive technology, and we look for new ways to ensure quality and consistency throughout production. To learn more about the HunterLab difference, [contact us today](#).

1. "Plastics and Polymer Composites in Light Vehicles", October 2015, <https://plastics-car.com/lightvehiclereport>
2. "Color and Appearance Measurement in the Plastic Industry", http://assets.tequipment.net/assets/1/26/Documents/Minolta/plasticsmeasure_app.pdf