

Recently, I was in the market for a new car. I scoured reviews, watched safety testing videos, and compared fuel efficiency to finally arrive at the perfect vehicle. I was sure this was the one for me and headed to online forums to try to get a sense of maintenance costs. What I found there stopped my automotive plans in their tracks: numerous owners reported that the paint color of one of the panels didn't match the rest of the car. The problem was widespread and I could not be assured that the car I ordered wouldn't have the same issue, so it was back to the drawing board.

## Accurate Measurement in Challenging Conditions

Cars are manufactured using hundreds of components of various materials and textures that must fit together into a cohesive, aesthetically pleasing whole. Of particular importance is the exterior body paint of the car; the smallest variation in color consistency can be a glaring error that impacts the appeal of the vehicle and drives consumers in another direction. Maintaining high color quality control standards is not only important for an individual car, but between cars to ensure that consumers receive what they expect based on brochure and model car representations. Precise color measurement is paramount to the manufacturing of new cars in order to maintain repeatable, accurate pigmentation of all components.

The paints used in the production of today's automobiles present special challenges to color monitoring and require sophisticated instruments to ensure accurate measurement. Integrating advanced spectrophotometric technologies in car production lines can ensure bumper to bumper color consistency and allow for accurate measurements, even when working with difficult materials. Metallic and pearlescent paint formulations that contain flakes of mica and aluminum to create different color perceptions based on the viewing angle are especially vulnerable to misreadings.<sup>1</sup> [In order to compensate for the shifting nature and high reflectivity of metallic paints, multi-angle spectrophotometers are used to measure color at multiple angles and produce reliable readings based on comprehensive spectral information. Spectrophotometric instruments can also be calibrated to ensure accurate measurement of non-metallic high-gloss paints with significant levels of spectral reflectance. By monitoring the color of each component and ensuring all the individual parts adhere to the set standard, auto manufacturers can create visually harmonious vehicles that satisfy consumer demands.](#)

## Expanding the Possibilities for Used Cars

While spectrophotometers are critical to the manufacturing of new cars, they can also play an important role in the maintenance and modification of used cars. Over time, the elements alter the appearance of automotive paints; even paint jobs that look perfectly good to owners often have slight variations from their original state due to the effect of sun exposure, pollution, and salt. If an exterior panel needs to be replaced following a collision, for example, putting a panel with the original color next to the worn color of the rest of the car can make the difference obvious. As such, auto body technicians use spectrophotometers to analyze the current color of the car to create an exact paint match that can be used for the replacement part, ensuring that the repaired vehicle has a cohesive appearance.<sup>2</sup> [However, you are not limited to recreating the existing color of a car. Through advanced color matching, auto body shops can create custom paints that allow customers to personalize their vehicles for a completely new look or to restore the car to its original glory with historically accurate colors.](#)

Full article with photos available here:

<https://www.hunterlab.com/blog/color-measurement-2/nice-ride-spectrophotometric-instruments-and-color-matching-in-the-automotive-industry/>