

My driving habits changed when I got my commercial driver's license. I started parallel parking like I was shooting pool. I slowed way down. And I started paying much more attention to traffic signs. Large vehicles react more slowly than smaller ones. An accident involving a large vehicle will be more serious. To drive safely, I needed to make decisions well ahead of time. With my attention divided between the condition of my vehicle, other vehicles, pedestrians, road conditions, and navigation, I needed to quickly and easily identify traffic signs. Color differences and reflectivity of signs made this possible. Without them, the roads would be far less safe to drive.



Warning signs are color coded to keep motorists safe. Image Credit: Flickr User [Jay Galvin](#) (CC BY 2.0)

### **Retroreflective Sheeting for Traffic Signs Must Meet Federal Color Standards**

For this reason, traffic signs must conform to the standards established by the Federal Highway Administration<sup>1</sup> regarding color and reflectivity. So, manufacturers of retroreflective sheeting for traffic signs must meet rigid color control standards. Whether supplying client companies or the next division of a vertically integrated company, color quality control is an essential stage of traffic sign manufacturing.

This is a matter of simple dollars and sense. In either case, rejections at delivery costs more than problems corrected on the production floor. Not only are time and materials wasted, but so are

delivery costs and the energy needed to run the machinery. For busy shops, the capacity lost to rework comes with an opportunity cost as well. That time could have been used to fill a new, profitable contract.



Highway signs must conform to federal color standards. Image Credit: Flickr User [Doug Kerr](#) (CC BY 2.0)

### **Spectrophotometers Accomplish Objective Color Assay**

Fortunately, the color standards do not rely on subjective, human analysis. When it comes to communicating precise differences in the shades of objects, human language lacks the necessary precision. To improve on our imperfect color description abilities, scientists back in the early 1930's developed a method to correlate the human perception of color to the instrumental measurement of light in terms of the primary colors Red, Green, and Blue. This allows an instrument to measure reflected light and provide numerical coordinates. As a result, acceptable tolerances for the colors of traffic signs can be objectively quantified.

Few people would claim to be able to look at a color and describe it numerically. A spectrophotometer is designed to do exactly that. As each sheet is extruded, spectrophotometric analysis can determine whether or not it will meet color tolerance standards. If sheets that do not meet standards are being produced at a growing rate, despite adherence to established formulas, managers should inspect their process to discover the problem. Doing so can lead to increased efficiency or adjustments in formulas.

Looks like someone was in a hurry. Image Credit: Flickr User [GizmoDoc](#)(CC BY 2.0)

### **Choosing the Right Instrument for the Job**

The effects of texture play a large role in spectrophotometric assay. With retroreflective sheeting, the 45/0 geometry is the prescribed method and the [ColorFlexEZ](#) has been chosen by many manufacturers to check their production. The ColorFlexEZ has built in the special retroreflective trapezoidal acceptance tolerancing capability.

With over sixty years of industry experience, the technicians at HunterLab have worked extensively in the color measurement of reflective materials. To learn which spectrophotometer would be best for your process, [contact the experts at HunterLab](#) today.

1. "STOPsigns and More Product Info," 2017, <http://www.stopsignsandmore.com/t-product-info.aspx>