

Color Control in the Plastics Industry: What You Need to Know

Many industries need to accurately measure, communicate, and consistently reproduce colors. Effective color management is important to business success for a number of reasons:



Color consistency is associated with **high quality**



Color can improve the **safety** and **usability** of products and environments



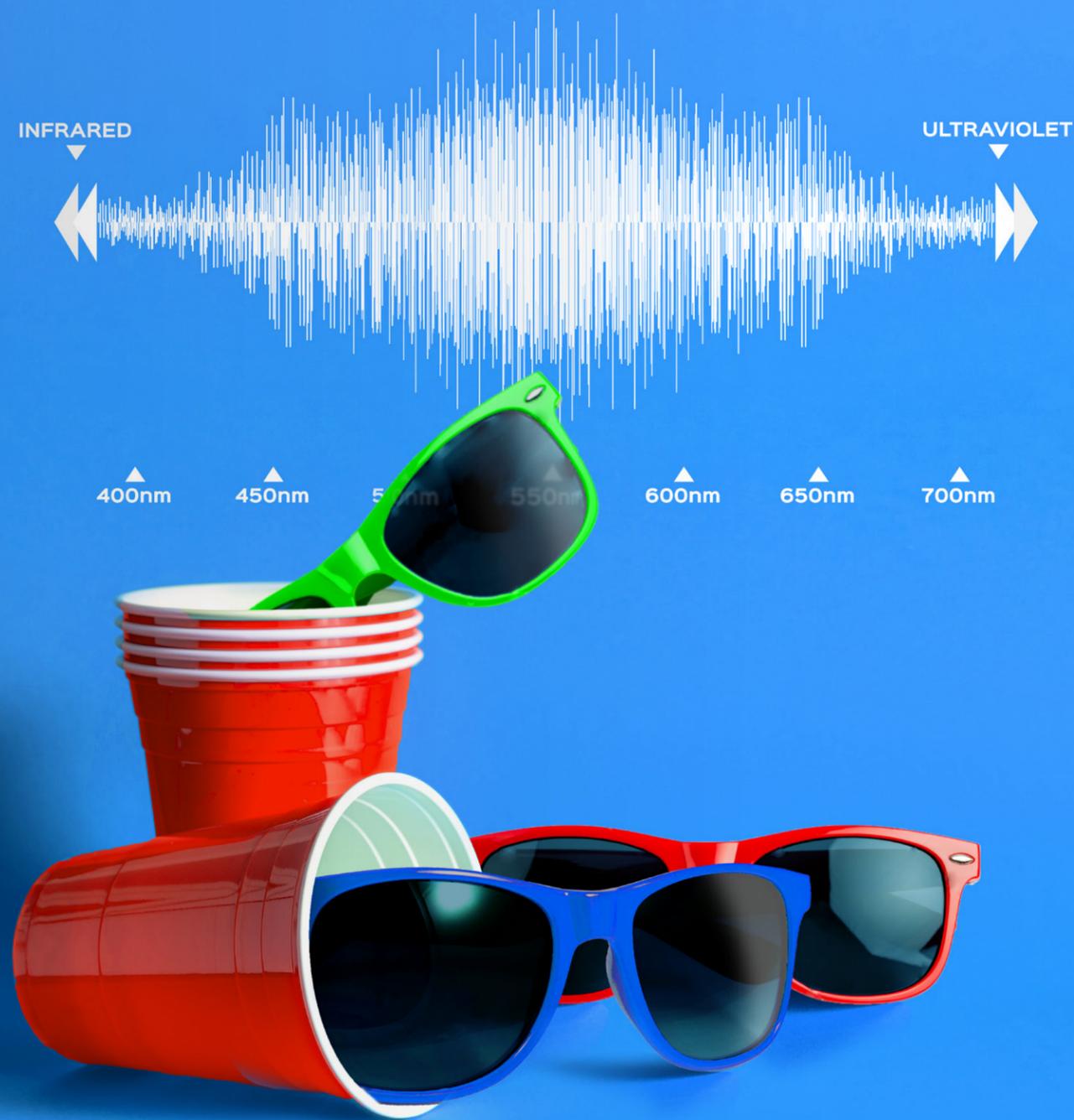
Color can trigger **emotional response** in potential customers



Color problems can create **unnecessary** production **expenses** and **delays**

In this industry guide, we'll look at some of the color challenges faced specifically by the plastics industry. We'll also discuss how Datacolor software, hardware, and expertise can support you. To begin, let's review the way we see colors.





COLOR PERCEPTION IS PERSONAL

Our eyes and our brain determine how we see, and specifically **How we see color**. Rods and cones are the photoreceptors in our eyes that provide sight. Rods allow us to see even in dim light, but cones are more sensitive to detail. And only the cones – sensitive to **red**, **green**, and **blue** light – let us see in color.

Light of various wavelengths appears to us as different colors, from long red waves to short blue ones. So as objects absorb and reflect light, we're able to see those objects in color.

There's nothing simple about seeing in color, though, and the colors we see are difficult to match precisely. Color vision is subjective. Different people interpret colors slightly differently depending upon the condition of their eyes, and other personal factors as diverse as mood, age, and state of health.



Color also varies according to **external physical factors** like the quality of the light source under which an object is viewed. Some studies suggest that color perception can even vary according to factors as unlikely as altitude.

Unless we have color blindness or other vision problems, we typically name colors within the same wide categories. We can agree that an object is red, blue, or green, for instance. But background color or other context can alter our perception, as we know from optical illusions. And when it comes to the subtle color matching required for accurate commercial production, our eyes and brains simply aren't up to the task.

QUALITY CONTROL IN A GLOBAL ECONOMY

For optimal accuracy, we need to depend upon [specialized instruments](#) that measure, display, and analyze colors. Datacolor offers [both portable and stationary instruments](#) to meet the requirements of a variety of situations. Higher-end spectrophotometers can calculate color recipes for commercial matching. This is particularly important in the plastics industry, where it can be so challenging to determine the best formulation.

Another reason we need to quantify colors is that elements of the production cycle are often physically remote from each other. Designers can be in different countries from manufacturers, and approvals might take place in still another location. Businesses need to shorten the time to market by using tools, devices and procedures that reduce or eliminate the need for physical samples.



WHY DATACOLOR CUSTOMERS IN THE PLASTICS INDUSTRY CONTROL COLOR:

[A leading plastics manufacturer](#) switched to Datacolor in order to increase the speed and accuracy of color matches and **streamline its operations across a wide geographic range.**

SEKISUI

[Sekisui Polymer Innovations, LLC](#) also needed to **improve its quality control.** The worldwide company's customers demand highly accurate color within short lead times.

SPECIAL CHALLENGES FOR PLASTICS

The 🖱️ **plastics industry** is complex and products vary widely. Materials range from **resins** and **pellets** to finished manufactured goods such as tools and toys. Plastic automotive and aircraft interior elements need to match or consistently coordinate with materials like textiles or leather. And as with other industries, consistent color is a measure of quality.

While accurate color matching is always tricky, the physical characteristics of plastics can require special attention. Materials can be **opaque** or **transparent**, and range from **matte** to **high gloss**. Surfaces might be **metallic** or **pearlescent**. Colorants themselves vary in type, and may need to survive stressful fabrication processes. Changes and errors with color can be very costly to rectify.



Here are just a few considerations when dealing with color in plastics:

- **How do I determine the right recipe?**
First, know your customer's needs. Hundreds of pigments are available that will allow you to create a particular color. Some pigments are much more expensive than others. Some are more light-fast, others are more weather-resistant, are food safe, or have other qualities important to particular customers. Our 🖱️ **Match Pigment software** helps users create default recipes, but will also generate custom blends based upon the parameters you enter.
- **How can I deal with color supply problems?**
If a dyestuff included in one of your recipes is not available because of a bad chemical or other problem, the recipe will have to be recalculated. With hundreds of pigments available, this could involve a huge amount of lab work. Again, you can use Match Pigment software to reformulate your color much more quickly.
- **How does gloss affect the way we see color?**
Sometimes, external factors affect the way colors appear to us. Gloss is an example of this. Two items might technically be the same color, but appear different if one has a high gloss and the other a matte finish. A spectrophotometer provides a mathematical description of a color, but it doesn't "see" color the way our eyes do. Datacolor's 🖱️ **Gloss Compensation** system adjusts measurements to account for this disparity.
- **How can I check quality control with plastic products?**
One way to quickly pass/fail assembly-line samples is with the Datacolor ColorReader. Initially designed for paint, this economical, easy-to-use portable device comes with QC functionality. For even more precise matching in the field or on the assembly line, we recommend the 🖱️ **Datacolor 45G** and 🖱️ **Datacolor Check 3** portable spectrophotometers.
- **What if I can't match a color?**
Sometimes a color simply can't be generated from the colorants you've selected. 🖱️ **Gamut Mapping** is a feature of our Match Pigment software that lets you know in advance if a target can't be matched. It then adjusts ingredients to let you know what colorant combination will achieve the desired result.



Sustainability considerations

The very durability of plastic products means their disposal is becoming recognized as an environmental problem. But the plastics industry itself recognizes that production errors have both economic and environmental repercussions, and is keen to find ways to reduce waste.

For the least waste in terms of time and materials, it's important to produce the right color the first time around. Our tools and expertise help you do that. And when mistakes happen, our Match Pigment software offers a [“recycle” feature](#) that can help you reuse off-color products in future batches. This saves in both material costs and disposal fees.

Additional Reading

[Color and Color Measurement](#)
(Datacolor eBook)

[Why Color Management Matters](#)
(How To Choose the Right Solution)

STREAMLINED PRODUCTIVITY & PERFECT COLORS

REDUCE TIME & COSTS, LESS WASTE

Datacolor solutions

Datacolor has color matching solutions for businesses throughout the plastics industry. We work with you to optimize the use of colorants, accurately measure the color of various materials, or ensure accurate color of finished products. Visit us online to see how our products meet the specialized needs of:

- Automotive interior manufacturers
- Resin producers
- Masterbatchers and compounders
- Plastics processors
- Hard goods retailers

Here are direct links to relevant solutions for color formulation and quality control from Datacolor:

- ➔ [Datacolor 700 and 1000](#)
- ➔ [Datacolor SpectraVision](#)
- ➔ [Datacolor 45](#)
- ➔ [Datacolor Check 3](#)
- ➔ [Datacolor Conditioner](#)
- ➔ [Datacolor TOOLS Software](#)
- ➔ [Datacolor Match Pigment](#)
- ➔ [Software Lightbooths](#)

Contact us for more information about how to address your particular business needs.

