

Plastic plaques are produced for a variety of purposes and serve an essential role in the development and evaluation of plastic products. On their most basic level, plastic plaques act as samples that allow manufacturers to see what their formulation will look like and how it will behave in its final form. The color of polymer pellets cannot be used to predict finished product appearance, as texture, gloss, and degree of translucence all impact color perception. Additionally, plastic extrusion and molding processes create heat, [which causes plastic to take on a slightly more yellow appearance](#). Rather than going through the time and expense of a full manufacturing cycle, plaques make it possible to quickly create a variety of samples for aesthetic and utilitarian assessment. Spectral analysis of these plaques is an essential part of plastics manufacturing and research, facilitating polymer design and production in an economical and efficient fashion.

Evaluating Plastics Spectrally

Spectrophotometers are an instrumental part of evaluating plaques to ensure accurate pigmentation based on an existing standard or to create a new color standard for future products. The versatile nature of spectrophotometric analysis and technology allows for precise measurement of opaque, translucent, and transparent plastics while accounting for variables such as texture and reflectance. [1](#) Aside from quantification of immediate color, spectrophotometers can be used to measure additional factors affecting the optics and performance of plastics:

Haze Measurement: Haze refers to the clarity of plastics. [Haze measurements allow plastic manufacturers to evaluate the specific level of transparency or translucence of a product and modify their formulation to reach their desired clarity.](#)

Yellowness Index: Over time, degradation of plastics often leads to yellowing as the result of light exposure. Spectrophotometric Yellowness Index testing allows plastics manufacturers to assess their product's susceptibility to this process and test the effectiveness of formulations designed to withstand yellowing.

Whiteness Index: There are multiple whiteness indexes that allow for precise measurement of white hues. Spectrophotometric analysis allows you to quantify the whiteness of plastics according to the standard that is most appropriate for your purposes.

Troubleshooting with Plaques

Once a product is in production, spectrophotometric analysis of plaques may be used to troubleshoot the manufacturing process should color inconsistencies arise. If masterbatch issues are suspected, for example:

[T]he testing for the actual dosage of masterbatch forms a major part of the investigation into complaints or other notifications of deficiencies. A tried and trusted method is the production of test plaques with both the recommended dosage and the suspected deviation from this. Colorimetric comparison to the suspect product can often provide a useful basis for identifying the cause of the problem. [2](#)

Objective spectral data allows plastics manufacturers to pinpoint problems and quickly evaluate corrective measures to optimize production. By combining the ease of plaques with the rapid, accurate analysis of spectrophotometers, you can significantly enhance efficiency to save both time and money.

Full article with photos available here:

<https://www.hunterlab.com/blog/color-plastics/joining-forces-how-spectrophotometric-analysis-can-optimize-the-value-of-plastic-plaques/>