

Best Practices for Color Formulation

Introduction

The color formulation process of paint and coating, plastic or other materials require standardizing conditions and procedures to match color standard efficiently. This involves defining conditions and methods, while also identifying variables within the environment or production process that could impact the color formulation results. In addition, color measurement instruments and sophisticated color formulation software are important to help achieve the right color with minimal time and waste.

Specifying the color measurement and visual evaluation conditions are recommended before proceeding with the color formulation process.

- Instrument type, model and geometry
- Standard illuminants and observer
- Viewing angle
- Color space
- Color formulation formula and tolerance values
- Sample preparation and presentation methods
- Light sources

Once these conditions are determined, a standardized color formulation process can begin. Below are some of the general best practices for matching color standard efficiently.

Color Measurement and Evaluation Best Practices

- Color standard should first be defined internally or externally between customer and suppliers. Next, measure the color you would like to match for the finished product using a color measuring instrument and record its [color values](#).
- Upload the standard's color values to a color formulation software for recipe calculation that best matches the standard



- Using the calculated recipe, create sample of this color in small batches. After sample preparation and if necessary, conditioning of samples, use a color measuring instrument to measure and compare its color values as well as reflectance curve against the standard

- Compare the sample against the standard visually within a controlled environment using a lightbox to check for any noticeable inconsistencies. To obtain accurate results and identification of [metamerism](#), it is recommended to perform the comparison under three different light sources



- Save the ideal recipe in the color formulation software to use in future batches

A [color formulation software](#) may calculate several recipes based on preset parameters like best color match or best cost. It is important to select the recipe that best matches the standard color under defined illuminants and light sources through both instrumentation and visual examination. Likewise, if a particular colorant that user feels work best together previously should be considered as well.

Color Formulation Conditions and Procedures Best Practices

- Equipment maintenance to ensure it is in proper working condition
- To ensure consistency, monitor the strength of incoming pigments or dyes

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- Based on the weight of the objects being colored, establish appropriate weighing methods for pigments, substrates, dyes or auxiliaries
- Calibration of [color measurement instruments](#) and weighing scales at scheduled times for accuracy and optimum performance
- Maintain the [lightbox](#) used for visual evaluations with lamp replacement
- Specify a fixed room temperature to avoid causing a drift in the color of your samples
- Standardize procedures from the start to end, which includes the creation of samples for measurement, mixing samples, the flash time after mixture and oven temperature and time for drying

By implementing a standardized color formulation process and establishing a controlled environment, matching color standards can be performed effectively with minimal waste and time.

Learn more about the basics of color measurement with our [free education handbook](#). Alternatively, you can call us at 6563 5533 or contact us through [here](#) for a free consultation with our color specialists on the color formulation process or the selection of color measuring instruments.