

Spectrophotometers Can Ensure Color Quality in High-End Oil Paint Manufacturing

When artists are seeking out a new color to put on a canvas, they tend to gravitate towards machine mixed paint from manufacturers they trust. While in many cases, handmade items are in high demand, in artist-grade oil paint the opposite is true. Machine-mixed paint, as opposed to hand mixed, offers a far superior result because the product is thoroughly crushed and combined, and the [color is consistent](#) across the manufacturer's line of products. Expert use of technology creates the difference in quality in every step of the creation process; machine rollers provide an even texture from the pigment, chromatographers ensure color purity and emulsifiers thoroughly combine the necessary ingredients, and spectrophotometers can be used to manage quality control.

Ultra-fine and artist-grade quality paints are not for simple hobbyists. The individuals who purchase these paints are typically professional artists who will be displaying their projects in public.¹ Machine-mixed oil paint is ideal for these individuals, as the results are durable, consistent and predictable. As a result, artists tend to stick to a specific brand of paint, as they know they can trust that manufacturer to offer a certain outcome. Manufacturers that wish to stay—or become—these trusted suppliers gain that trust through [guaranteeing their products with spectrophotometric color measurement](#) in order to ensure accuracy and consistency.

Color Consistency Challenges in Oil-Based Paint Production

The creation of oil paint has changed significantly since the Middle Ages when these types of paints first came into popularity.² During that time, artists created their paints in the studio. They'd purchase base pigments at apothecaries and mix them with vegetable oil, gums, resins, and other materials needed to create a workable color, mixed from recipes passed down from generation to generation. However, mixing oil paint was a time-consuming process made even more difficult by the lack of materials available, meaning that rarely could the artist create the same color twice. Mid-nineteenth century improvements in both technology and chemistry provided mass-produced paint for artists who wanted a superior, more predictable product.

Even today, with all our technological advances, it can still be difficult to ensure a consistent color every time. There are a number of variables that will impact the result of oil paint, including:

- **Particle size:** The base pigment size will influence the outcome, as colors tend to get lighter when pigment is finely ground and darker when particles are left larger.
- **Oil types:** The oil base of the paint will have a direct impact on that paint's luster, opacity, and brilliance. Many different oils are used in the production of oil paint; linseed, sunflower, and vegetable oils are just a few examples. The oil type will also affect drying time as well as the painting's longevity.
- **Additives:** Additives are usually the secret twist that makes a manufacturer's formula unique. Anything from resins to waxes to additional pigment can be used to change the end color, the texture of the end color, and how long it takes for the paint to achieve its final result.
- **Mixing process:** How the paint is mixed is as important as the components themselves. Machine-mixed paint tends to be better overall than hand-mixed due to the machine's ability to finely grind powder. It also makes for less expensive paint, as mass production offers better profit margins, even with expensive pigments. Finally, machine mixing allows for greater color variety, as many large batches can be mixed at once rather than being limited by a laborious, small-batch hand-mixing process.

Full article available here:

<https://www.hunterlab.com/blog/color-measurement-2/using-spectrophotometers-to-ensure-quality-results-in-high-end-oil-paint-manufacturing/>