



KONICA MINOLTA



Application note - Bridging material color and real-use appearance

Expanding Color Measurement Capabilities

Customized Fixtures

An integrated solution with the CM-17d for measuring cosmetic materials, hair, and skin appearance

In the cosmetics industry, color design is no longer limited to the color of materials themselves. Increasingly, it is essential to consider how colors actually appear when applied to skin or hair. In recent years, growing diversification of trend colors, more sophisticated texture expression, and the need to address a wide variety of skin tones and hair types have made it increasingly difficult to manage development and quality control based solely on the color of individual raw materials.

The CM-17d spectrophotometer, when combined with customized fixtures, enables consistent measurement and quantification from raw material evaluation through real-use conditions on hair and skin. This application note introduces a practical measurement solution that helps cosmetic material developers enhance color reproducibility, development efficiency, and quality stability.



Color measurement in the Cosmetics Industry

In the cosmetics market, increasing diversification of consumer needs has driven continuous advancement in color and texture expression. A wide range of colors is expected to coexist - from reassuring tones such as soft pinks and greens, to self-expressive berry hues and jewel tones, and even futuristic, digitally appealing colors such as metallic and interference colors.

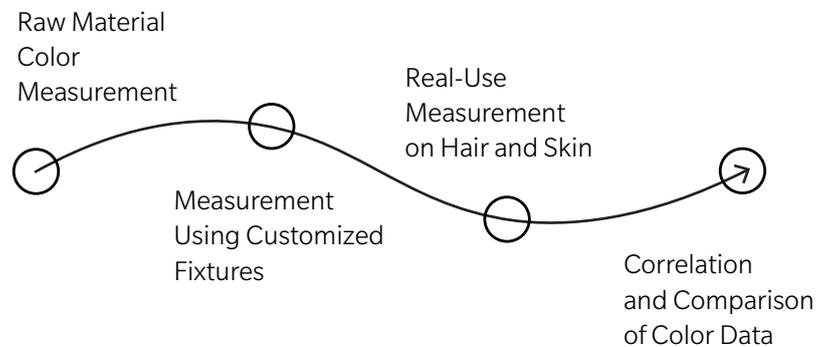
Under these conditions, evaluation must go beyond confirming whether raw materials match the intended color. It is equally critical to assess how those colors actually appear when applied to skin or hair.

However, conventional color measurement approaches face several challenges:

- Raw materials can be measured, but post-application appearance often relies on sensory evaluation
- There is no suitable evaluation method for curved surfaces, fibers, or powders
- Evaluation methods are fragmented between the development stage and mass production quality control

As a result, development processes are prone to increased prototyping cycles, color variation, and misalignment of understanding between departments. Within this industry landscape, a system that enables evaluation of both raw materials and applied colors using the same instrument and the same metrics plays a crucial role in achieving both development efficiency and consistent quality.

Evaluation Concept Using CM-17d with Customized Fixtures



Application & Benefits

Hair Measurement Application

Dyed hair tresses are measured with the CM-17d using customized fixtures that securely hold actual hair samples, allowing quantitative evaluation of color variations due to hair type and dyeing conditions.

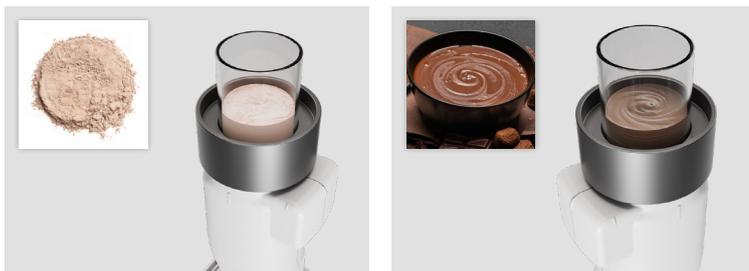
Benefits

- Clear understanding of the correlation between hair color materials and dyed hair appearance
- Color design without reliance on sensory evaluation
- Reduction in prototyping cycles during new color development



Measurement of Powder and Paste-Type Cosmetic Materials

Powder and paste-type materials are stably held using customized fixtures and measured with the CM-17d spectrophotometer. Color appearance can be evaluated assuming different skin types, and multi-layer application and texture changes can also be quantified.



Benefits

- Quantitative understanding of the differences between material color and appearance on skin
- Supports color design optimized for a wide range of skin tones

Workflow for Implementing Customized Fixtures



Requirements hearing
(measurement target
& constraints)



Concept design
/ fixture proposal



Agreement



Fixture fabrication
& implementation



Key Benefits

Conclusion

Consistent management of raw material color and applied color - Eliminates fragmentation between development and quality control

High reproducibility with fixtures optimized for the measurement target - Stable measurement of curved surfaces, hair, and powders

All measurements can be completed with a single CM-17d - Reduces measurement time, cost, and instrument management burden

At Konica Minolta, we offer custom fixture design not only for the CM-17d but also for a wide range of instruments, tailored to each customer's application. [Please feel free to contact us for more information.](#)



CM-17d

Fast and accurate color measurements on small, curved, or flexible surfaces, with dual aperture.