

PERSONAL CARE INDUSTRY COLOR CONTROL

THE COLOR QUALITY OF SHAMPOO



Shampoo a type of liquid cleaning agent for the hair. Shampoo has a number of qualities and usage like how well a shampoo cleans is very important. Individual brands have their own different formulations for different types of hair and scalp. The fragrance of a shampoo is also a major consideration and that is why scented shampoos are popular. Other factors are also taken into account like how shiny it makes the hair, possible irritation of the scalp and toxicity.

There are many different categories of specialty shampoos, with each type claiming to have properties beyond cleaning hair like dandruff free shampoos, color retaining shampoos, baby shampoos, hair thickening shampoos, 2-in-1 shampoos that contain conditioners and many more.

Perception of Hair Shampoo

When an individual evaluates a product whether at the point of purchase or during use, they do so by using their senses. Appearance and visual is a key perception for consumers when deciding on the purchase of shampoo.

Color of shampoo is influenced by the source of the fragrance of shampoo. These fragrances can range from herbal, floral, fruity and many more. With color not only the fragrance is enhanced, but the texture characteristics of the products are also affected by the color used. Strong colors are perceived to have a stronger blend of chemicals, where lighter colors deem the product to be more natural and easy towards the scalp and hair.



Color Measurement

To measure color scientifically, color measuring instruments like spectrophotometers and chroma meters are ideal tools used for color measurements. Color measuring spectrophotometers are widely used for quantifying the color of a product, in the development stage of products, for the processing process of the product, to do trend analysis and performance evaluation.

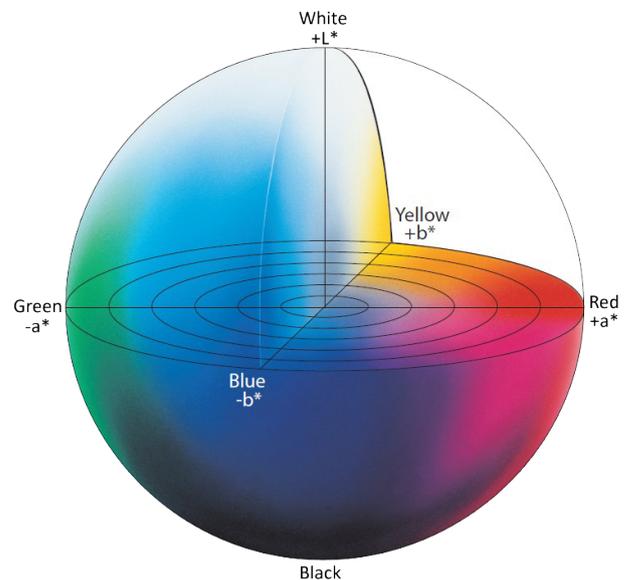
As shampoo comes in a liquid form and its texture is mostly

opaque or in some products translucent in texture, bench-top spectrophotometers are ideal for such application. A bench-top spectrophotometer is able to provide both reflectance (for opaque) and transmittance (for translucent) type of measurement. In consideration, as shampoo is in a liquid form, a petri dish or glass cell is to be used to hold the samples of shampoo.



Analysis and Process

There are 2 texture types for shampoos, the majority being opaque types which reflectance measurement is usually used and the translucent type which is the least common type, for this application we use transmittance measurement to measure. With the usage of a spectrophotometer the sample is measured and data are converted into the CIE L^*a^*b or CIE $L^*c^*h^*$ color space system which is displayed by the instrument, with this data of information color can be quantify by the user to ensure its consistency.



Reflectance

Reflectance measurement, opaque sample is poured into a petri dish or glass cell and it is set on the opening of the instrument for measurement. Using a lamp as a light source to generate light and coupled together with an integrating sphere, light is directed to the sample. The sample will absorb and reflect the color properties of the light and is picked up by the sensor for the computation of the color data.

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Transmittance

Likewise for the transmittance measurement, the translucent sample is poured into a glass cell and is placed in the transmittance chamber. A lamp will illuminate the integrating sphere and directed to the sample, light will pass through the sample and onto the sensor, and data will be computed to determine the color and translucency of the sample.

The ability to retain or enrich the color of dyed hair which is an essential function for certain brands of shampoo, color test are also carried out on hair colors before and after wash to compare the color difference in shade.

Technologists' use color data in the research & development stages to determine the color that matches the fragrance of shampoo, use color data to compare and analyse

the ability to retain the color of dyed hair after use, and determine the color of the packaging for the final product.

In the manufacturing process control, spectrophotometers are used to monitor the color during the blending process of shampoo, assess the grading of final product and ensure the color consistency of both the product and packaging.

Konica Minolta offers a wide range of chroma meters and spectrophotometers for color quantifying measurements. For more information on color measuring instruments, please visit our Konica Minolta website at <http://sensing.konicaminolta.asia>.

Alternatively, you can email to us at ssg@gcp.konicaminolta.com or call us at +65 6895 8685 to find out more from our product range or solutions that we offer for your specific application.