Best Practice to manage Color (In)Constancy

Color (In)Constancy

Color (In)Constancy is the term related to a single color which changes shade when viewed in different light sources. It should not be confused with Metamerism which is the term related to a pair of colors which match under one light source but do not match under a different light source.

Khaki under 3 different lightsources

Color (In)Constancy is particularly relevant in shades such as earhtones which can change hue dramatically when viewed under different light sources. An example is a khaki shade which can appear greenish in hue under D65 Artificial Daylight, but change to a brownish hue under Illuminant A Tungsten light.

Color Constancy is governed by color physics, and in certain shades (neutrals, olives, blacks, navies, browns etc) efforts can be made to minimise color inconstancy. In bright shades where there are dominant values in the reflectance curve, (violets, reds, bright blues, turquoise etc.) it is impossible to eliminate or even minimise color inconstancy.
The most important stage in the development of retailer/brand color standards is to examine options of dye combinations against a target shade in the mind of the designer. Priorities need to be agreed such as color fastness specification to be met, and any co-ordination requirements between different fibres such as cotton and polyester...and the ability of any dye formula produced to deliver Right-First-Time (RFT) in the production environment!

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Incorporate color constancy equations in computer match prediction software that is used to formulate Brand & Retailer colors. For example, the Metameric Index (M.I.) and the Color Inconstancy Index (CMCCON02) in the color matching software allows full consideration of all aspects of dye selection at this vital stage. In addition, it cannot be emphasised too greatly the importance of establishing the master standard against which all substrates required to be matched in a given priority of illuminants.

If you are interested in more information about Color (In) Constancy, please contact the color experts at CSI and DyStar.

*Reference:*