Spectrophotometers Ensure Efficacy of UV Sensor Products to Protect Consumers From the Sun

Photochromic color change—where a product changes color due to UV exposure—isn't just a novelty as seen in products like color changing t-shirts or cosmetics. A growing number of companies are harnessing the power of photochromic color change to create UV sensor products designed to warn users of excess sun exposure. One such product is UV wristbands; after putting these wristbands on, you apply sunscreento both yourself and the band. As UV exposure increases with prolonged time in the sun, the wristband turns from a light, nearly translucent color to a deep purple, indicating that you should apply more sunscreen. When the band turns cream color, it acts as a warning to the user to get out of the sun entirely.

At a time when 3.3 million people suffer from some form of skin cancer each year, often related to sun exposure, these innovative UV sensor products offer consumers a new way to protecting their health and wellbeing.[1] However, the company's ability to guarantee correctness of UV indication is critical and the efficacy of these products hinges on thorough testing by manufacturers to ensure that color change is noticeable, easily interpreted, and correctly timed. One of the key ways manufacturers can evaluate the efficacy of their products is by integrating spectrophotometric color measurement within their production process, allowing for deeper insight into color behavior.

Color Changing UV Sensors Protect Users

Some photochromic color changing products, like t-shirts, stickers and even cosmetics, change based on *any* sun exposure, but don't offer the consumer a warning of *excess* sun exposure. While such accessories are undoubtedly fun, they should not be confused with products designed to warn users about dangerous levels of UV exposure.

Any photochromic product designed to be an accurate UV sensor can be used as a warning system, telling the user when to apply more sunscreen or cover up. While some products are being developed to function without sunscreen, most currently work in conjunction with the user's sunscreen to provide an early warning to apply more product or go inside. [2] To work effectively, these products must be capable of multiple transitions, moving from the original color to the warning color to the final shade based on precise analysis of UV levels. The transition must also be reversible, allowing the product to return to the original color upon sunscreen reapplication. Additionally, they must not be impacted by things like moisture or pH balance, as this could compromise readings, and they must be non-porous to prevent malfunction due to prior sunscreen application.

For many, UV sensors are eye-opening. While it is generally understood that prolonged exposure to the sun on hot, sunny days can be dangerous, many don't realize that they can passively suffer from sun exposure when they're not expecting it. This is true even when sunburn may not appear to be an issue, as 80% of the sun's UV rays are capable of passing through the clouds on an overcast day, contributing to skin damage.[3] This is why products that warn a user of excess sun exposure can be game-changing—but only if they're appropriately sensitive and accurate. By using spectrophotometers, the makers of these products are better able to create effective transitions to warn the wearer when they've been in the sun too long.

Full article with photos available here:

https://www.hunterlab.com/blog/color-measurement-2/spectrophotometers-ensure-efficacy-of-uv-sensor-products-to-protect-consumers-from-the-sun/