TECHNICAL WHITE PAPER:

UV FASTCHECK STRIPS AND THEIR UVC RESPONSE CHARACTERISTICS FOR THE VALIDATION OF UVC GERMICIDAL SOURCES

PRIMARY USE

UV FastCheck Strips, our item N010-002, are intended for use as a UV dose indicator in industrial UV curing processes that utilize UV-A/UV-B energy in a photo-polymerization process.

The UV FastCheck Strip can be used to determine levels of UV dose with a simple, visual inspection due to the 5 separate color changing zones. Each of the 5 zones change color after a specific amount of UV dose has been received. First the "1" zone begins turning from yellow to blue-green. Then each subsequent color zone starts to change color when its specific chemistry has received the proper amount of UV to activate its color change. As the dosage increases, eventually the zones begin to saturate and will stall at the darkest color achievable. All 5 zones transition through the same color changes and reach the same saturation color, just at different rates/dosages. You therefore have a strip that is not only visually progressing through gradations of color, but also showing progression through scale as each zone eventually begins to match the other.

It is because of this combination of color change and scale that we could also create a color guide that correlates those changes to a specific dose of UV as measured by a radiometer. The combined changes visually differed enough to be captured photographically and therefore were reproducible through common 4-color printing processes.

UVC COMPLICATIONS

The materials that we use are of a broad range response type that reacts well to all invisible UV including UVC. However, it was discovered early in the products development that we have a very unique response when exposed to UVC exclusively. The stepping mechanisms utilized to create the sensitivity differences within the 5 zones are defeated/bypassed by UVC Energy. As a result, only the first zone differs slightly from the other zones in sensitivity, whereas the other four zones change color at exactly the same rate.

POTENTIAL BENEFIT

Knowing that the FastCheck Strip reacts differently when exposed to UVC energy exclusively, it has potential usage as a tool for verification that the process being employed is in-fact UVC light, versus other forms of UV not beneficial to a germicidal UV application. If the label reacts in its typical stepped fashion, then the presence of UVB and/or UVA exists in the process. This is not to say that UVC is not present, but an effective germicidal UV system would be mostly void of UV-A and UV-B. More desirable would be to see the UVC response where the stepping mechanism is defeated. This would validate the light as being an effective germicidal type.