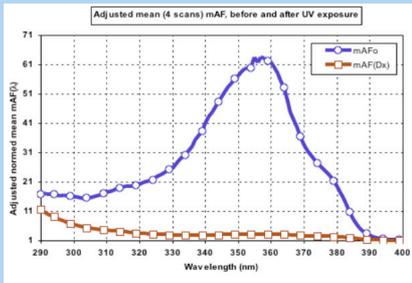
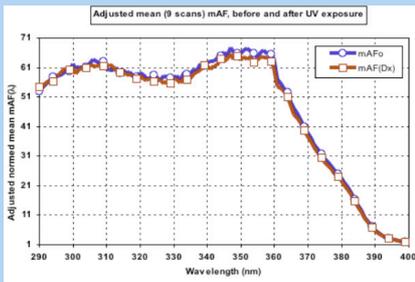




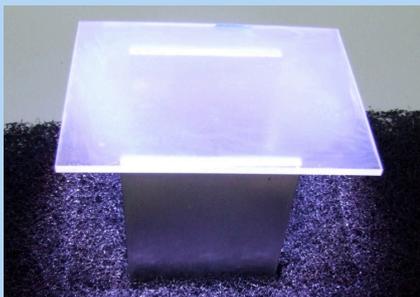
STEPS



1. PHOTUNSTABLE FORMULATION



2. PHOTOSTABLE FORMULATION



3 UV LIGHT CHALLENGE

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Photostability-Sunscreens

Photostability is now heavily promoted by several international sunscreen market leaders. Although more prevalent in Europe, the claim is appearing on Australian based websites. Recently, the FDA was petitioned with the proposal that only photostable products be permitted for marketing. At this time, photostability is not a requirement of any monograph around the world and has not been defined.

How do we define photostability?

There are a number of published in-vitro interpretations suggesting protocols for the evaluation of photostability. The principle of these is essentially the application of UV light to a sunscreen – generally in a thin film – and the comparison of pre and post irradiation effects on the quantity and quality of the sample. The ISO Standard 24443 Cosmetics – In vitro determination of UVA Protection⁽⁶⁾ is an example. Although not intended to define photostability, the method does discriminate the effects as they relate the relationship of the UVA protective contribution of the product once it has been light challenged. A modification of this method is used by Dermatest in order to quantify photostability.

Photostability by Spectral Analysis

The test sample is applied to a standardised PMMA substrate at a specified film thickness. Following application, the film is allowed to dry for 30 minutes at 35°C and then placed into the light path of a spectrophotometer fitted with an integrating sphere device. The absorbance is determined between the wavelengths of 290 and 400 nm. The PMMA slide was then placed in the light path of a full

spectrum Xenon Arc Solar Simulator. This light source omits pure white light at 60000k in a continuous spectrum over the UV, visible and I.R. spectrum. Following irradiation for the equivalent of 33% of the SPF the sample is again placed into the spectrophotometer and the spectrum measured qualitatively and quantitatively. The two spectra, before and after irradiation, are then accessed.

Reporting of Results

This change is determined by variation in the comparative SPF value. This change is determined by variation in the comparative UVA Ratio. The change is reported as a percentage and a descriptive report is provided.

Photostability by Chemical Analysis

An analytical approach can also be used in order to investigate chemical degradates.

References

1. Different Sunscreens Provide Different Skin Protection Melbourne Dermatology (web site) <http://www.treatment-skincare.com/April-2007/Sunscreens.html>
2. Photostability of Commercial sunscreens upon sun exposure and irradiation by ultraviolet lamps Gonzalez. H. et al BCM Dermatology 2007:7:
3. Spectral uniformity: a new index of broad spectrum (UVA) protection B. Diffey International Journal of Cosmetic Science Volume 31, Issue 1, pages 63–68, February 2000