

Color Change of Materials Produced by Laboratory Exposure to UV Fluorescent Lamps with Extended Light Spectrum

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Abstract

UVA-340 Fluorescent UV lamps are commonly used for accelerated weathering testing of polymers. While the instruments that use these lamps are very good at simulating the effects of real-world moisture and shortwave UV light (295 – 360 nm), it can be difficult to correlate laboratory and outdoor degradation of colored plastics that are sensitive to longwave UV light (360 – 400 nm).

Historically, color change experienced by colored plastics outdoors are reproduced well when exposed in a xenon-arc tester, but not in exposure to fluorescent UVA-340 lamps. To address this issue, a new type of Fluorescent UV lamp was designed to deliver a broader light spectrum (295 - 450 nm). A variety of colored materials were tested using these new lamps, and the results were compared against results obtained from standard UVA-340 Fluorescent UV, xenon-arc, and outdoor exposures. This comparison indicates that color change observed from the new light source consistently matches outdoor results better than standard UVA-340 lamps.