

ULTRA ACCELERATED WEATHERING SYSTEM I: DESIGN AND FUNCTIONAL CONSIDERATIONS

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Abstract

This paper describes the structure and design rationale for a new ultra accelerated weathering system. The system allows a 63 year (approximate) equivalent South Florida UV radiant exposure within a single year of ultra accelerated exposure. The system provides high fidelity to natural solar UV spectral power distributions while attenuating visible and IR wavelengths to maintain acceptable specimen exposure temperatures. The paper includes data showing correlation between ultra accelerated exposure and real world exposure. This paper is the first in a series describing the system and exposure results and reviews accomplishments of a cooperative development effort between Atlas Material Testing Technology, the National Renewable Energy Laboratory and the Institute for Laser Optical Technology under the Department of Energy's Global Initiative for Proliferation Prevention program.