

Accelerated Weathering by QUV

ASTM D4329, D4587

Scope:

Accelerated weathering simulates damaging effects of long term outdoor exposure of materials and coatings by exposing test samples to varying conditions of the most aggressive components of weathering - ultraviolet radiation, moisture and heat. A QUV test chamber uses fluorescent lamps to provide a radiation spectrum centered in the ultraviolet wavelengths. Moisture is provided by forced condensation, and temperature is controlled by heaters. No direct correlation can be made between accelerated weathering duration and actual outdoor exposure duration.

Test procedure:

Up to 20 test samples are mounted in the QUV and subjected to a cycle of exposure to intense ultraviolet radiation followed by moisture exposure by condensation. Various cycles are defined depending upon the intended end use application - for example, a typical cycle for automotive exterior applications would be 8 hours UV exposure at 70° C followed by 4 hours of condensation at 50° C. These cycles would be continued for extended periods of time - up to thousands of hours - simulating even longer periods of time in the real world.

Specimen size:

Typically, flat plaques or disks are used for accelerated weathering studies. The standard sample holders can hold one sample 75 x 300 mm or two samples 75 x 150 mm

Data:

Accelerated weathering provides exposed samples for comparison to unexposed control samples. Often several exposure times (such as 500, 1000, and 2000 hours) also will be compared to each other. Depending upon the performance requirements of concern, such a comparison may involve measurements of Haze, Transmission, Yellowness Index, Color Change, and/or physical properties such as Impact Strength.

