

Xenon-Arc Exposure of Plastics Intended for Indoor or Outdoor Applications

ASTM D2565, D4459

Scope:

Accelerated weathering simulates the 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 - light, moisture, and heat. A Weather-Ometer uses a xenon arc light source to provide a radiation spectrum that simulates natural sunlight. Glass filters around the xenon arc modify the light spectrum to simulate the appropriate end use conditions. Moisture is provided by a humidifier and direct spray, 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 60 test samples are mounted in the Xenon Arc and subjected to a cycle of exposure to specified combinations of light from 300 to 400nanometers, humidity, temperature and water spray. Various cycles are defined by the appropriate specifications depending upon the intended end use application. Polystyrene Light fastness Standards are included among the test samples to monitor and verify the performance of the equipment. 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:

Standard specimens are 69mm x 145mm

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.

