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Standard Terminology Relating to Natural and Artificial Weathering Tests of Nonmetallic Materials¹

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1. Scope

1.1 This terminology standard covers terms that relate to the durability testing of Nonmetallic Materials using natural and artificial weathering exposure techniques.

1.2 It is the intent of this standard to include those weathering terms in wide use in ASTM for which standard definitions appear desirable.

2. Referenced Documents

2.1 ASTM Standards:

D 9 Terminology Relating to Wood²

E 41 Terminology Relating to Conditioning³

E 284 Terminology of Appearance³

E 349 Definitions of Terms Relating to Space Simulation⁴

E 456 Terminology Relating to Quality and Statistics⁵

E 772 Terminology Relating to Solar Energy Conversion⁶

E 973 Practice for the Determination of the Spectral Mismatch Parameter between a Photovoltaic Device and a Photovoltaic Reference Cell⁶

G 84 Practice for Measurement of Time-of-Wetness on Surfaces Exposed to Wetting Conditions as in Atmospheric Corrosion Testing⁷

G 90 Practice for Performing Accelerated Outdoor Weathering of Nonmetallic Materials Using Concentrated Natural Sunlight³

2.2 AATCC Method:⁸

16 Colorfastness to Light

3. Significance and Use

3.1 This terminology is not intended to supersede the requirements of similar definitions in certain other documents, but is intended to provide a listing of terms that are in current widespread usage, and their context in relation to weathering.

¹ This guide is under the jurisdiction of ASTM Committee G-3 on Durability of Nonmetallic Materials and is the direct responsibility of Subcommittee G03.92 on Editorial and Definitions.

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² Annual Book of ASTM Standards, Vol 04.10.

³ Annual Book of ASTM Standards, Vol 06.01.

⁴ Annual Book of ASTM Standards, Vol 15.03.

⁵ Annual Book of ASTM Standards, Vol 14.02.

⁶ Annual Book of ASTM Standards, Vol 12.02.

⁷ Annual Book of ASTM Standards, Vol 03.02.

⁸ Available from American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.

4. Terminology

4.1 Definitions:

accelerated outdoor weathering, *n*—outdoor weathering using the sun as the source of irradiance, and where the rate of deterioration is accelerated over that of the in-service exposure position increasing one or more of the influencing parameters.

actinic radiation, *n*—the spectral region(s) of a light source responsible for the photodegradation of a particular material.

ambient temperature, *n*—the existing temperature of the air or of an object in thermal equilibrium with the surrounding atmosphere.

azimuth angle, *n*—an angle of a plane to the horizon measured clockwise to the object.

backed exposure, *n*—a technique of weathering in which the test specimens being exposed are mounted onto a solid backing material, of sufficient strength to hold the specimen. When the specimen and the backing are in direct contact the backing material must be of a type that will not contaminate the specimen. When two materials are intimately joined together to form one composite, the materials below the top surface are not considered as a backing.

DISCUSSION—The backing is typically plywood which has the effect of increasing specimen temperature and wet time during exposure, compared to exposure unbacked.

black box, *n*—a black painted aluminum box with an open top where the flat test specimens to be exposed constitute the top surface of the box. The box is equipped with mounting strips to hold the test specimens firmly in place. The top surface of the box must be completely filled at all times; any blank spaces on the top surface must be occupied by black “dummy” panels to maintain correct operating condition.

black box under glass, *n*—a glass covered enclosure or cabinet of any convenient size. It shall be constructed of corrosion resistant metal and be enclosed to prevent ambient air from circulating over the samples. Exterior non-glass surfaces shall be painted black. The interior shall remain unpainted.

black panel thermometer, *n*—a temperature measuring device consisting of a metal panel, having a black coating which absorbs all wavelengths uniformly, with a thermal sensitive element firmly attached to the center of the exposed surface. The black panel thermometer is used to control an