



Standard Practice for Determining the Activation Spectrum of a Material (Wavelength Sensitivity to an Exposure Source) Using the Sharp Cut-On Filter or Spectrographic Technique¹

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1. Scope

1.1 This practice describes the determination of the relative actinic effects of individual spectral bands of an exposure source on a material. The activation spectrum is specific to the light source to which the material is exposed to obtain the activation spectrum. A light source with a different spectral power distribution will produce a different activation spectrum.

1.2 This practice describes two procedures for determining an activation spectrum. One uses sharp cut-on UV/visible transmitting filters and the other uses a spectrograph to determine the relative degradation caused by individual spectral regions.

NOTE 1—Other techniques can be used to isolate the effects of individual spectral bands of a light source, for example, interference filters.

1.3 The techniques are applicable to determination of the spectral effects of solar radiation and laboratory accelerated test devices on a material. They are described for the UV region, but can be extended into the visible region using different cut-on filters and appropriate spectrographs.

1.4 The techniques are applicable to a variety of materials, both transparent and opaque, including plastics, paints, inks, textiles and others.

1.5 The optical and/or physical property changes in a material can be determined by various appropriate methods. The methods of evaluation are beyond the scope of this practice.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

NOTE 2—There is no ISO standard that is equivalent to this standard.

¹ This practice is under the jurisdiction of ASTM Committee G03 on Weathering and Durability and is the direct responsibility of Subcommittee G03.01 on Joint Weathering Projects.

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2. Referenced Documents

2.1 ASTM Standards:²

- D256 Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
- D638 Test Method for Tensile Properties of Plastics
- D822 Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings
- D1435 Practice for Outdoor Weathering of Plastics
- D1499 Practice for Filtered Open-Flame Carbon-Arc Exposures of Plastics
- D2244 Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
- D2565 Practice for Xenon-Arc Exposure of Plastics Intended for Outdoor Applications
- D4141 Practice for Conducting Black Box and Solar Concentrating Exposures of Coatings
- D4329 Practice for Fluorescent Ultraviolet (UV) Lamp Apparatus Exposure of Plastics
- D4364 Practice for Performing Outdoor Accelerated Weathering Tests of Plastics Using Concentrated Sunlight
- D4459 Practice for Xenon-Arc Exposure of Plastics Intended for Indoor Applications
- D4508 Test Method for Chip Impact Strength of Plastics
- D4587 Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings
- D5031 Practice for Enclosed Carbon-Arc Exposure Tests of Paint and Related Coatings
- D6360 Practice for Enclosed Carbon-Arc Exposures of Plastics
- D6695 Practice for Xenon-Arc Exposures of Paint and Related Coatings
- E275 Practice for Describing and Measuring Performance of Ultraviolet and Visible Spectrophotometers
- E313 Practice for Calculating Yellowness and Whiteness Indices from Instrumentally Measured Color Coordinates

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.