



Designation: F 1515 – 98

Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change¹

This standard is issued under the fixed designation F 1515; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method covers a procedure for determining the resistance of resilient floor covering to color change from exposure to light over a specified period of time.

1.2 *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.*

2. Referenced Documents

2.1 ASTM Standards:

D 2244 Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates²

D 2565 Practice for Operating Xenon Arc-Type Light-Exposure Apparatus With and Without Water for Exposure of Plastics³

D 4459 Practice for Operating an Accelerated Lightfastness Xenon-Arc Type (Water-Cooled) Light-Exposure Apparatus for the Exposure of Plastics for Indoor Applications⁴

E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods⁵

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method⁵

G 26 Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials⁵

2.2 DIN Standard:

DIN 53384 Artificial Weathering and Aging of Plastics by Exposure to Laboratory UV Radiation Sources, April 1989

3. Summary of Practice

3.1 Specimens are exposed continuously at a controlled temperature and humidity to a properly filtered xenon-arc

radiant-energy source. The filters selected are to simulate indoor exposure conditions behind window glass. See Practice D 4459.

3.2 To ensure uniform exposure, the specimens are mounted on a cylindrical framework that rotates around the xenon lamp suspended in the center.

3.3 The effect of radiation (actinic and thermal) on the specimen shall be the color difference between the specimen before and after exposure.

4. Significance and Use

4.1 Resilient floor covering is made by fusing polymer materials under heat or pressure, or both, in various manufacturing and decorating processes. The polymer material may be compounded with plasticizers, stabilizers, fillers, and other ingredients for processability and product performance characteristics. The formulation of the compound can be varied considerably depending on the desired performance characteristics and methods of processing.

4.2 Light stability, which is resistance to discoloration from light, is a basic requirement for functional use.

4.3 This test method provides a means of measuring the amount of color change in flooring products when subjected to accelerated light exposure over a period of time (functional use of the flooring product).

4.4 This test method specifies that a sample is measured by a spectrophotometer and expressed in ΔE^* units before and after accelerated light exposure.

NOTE 1—It is the intent that this test method be used for testing light stability performance properties to be referenced in resilient flooring specifications.

5. Apparatus

5.1 The apparatus employed shall utilize either a water-cooled or air-cooled xenon-arc lamp as the source of radiation and should be of Type AH, BH, or E as described in Practices D 2565 or G 26.

5.1.1 *Type AH*—An exposure apparatus in which the source of radiant energy shall be a water-cooled xenon-arc vertically located at the central axis of either a 20-in. (508-mm) diameter vertical specimen rack, or of a 25.5-in. (648-mm) diameter inclined rack. Means shall be provided to control temperature, relative humidity, and spectral irradiance. The specimen rack

¹ This test method is under the jurisdiction of ASTM Committee F-6 on Resilient Floor Coverings and is the direct responsibility of Subcommittee F06.30 on Physical Service Properties.

Current edition approved March 10, 1998. Published June 1998. Originally published as F 1515 – 95. Last previous edition F 1515 – 97.

² *Annual Book of ASTM Standards*, Vol 06.01.

³ *Annual Book of ASTM Standards*, Vol 08.02.

⁴ *Annual Book of ASTM Standards*, Vol 08.03.

⁵ *Annual Book of ASTM Standards*, Vol 14.02.