



# Standard Test Method for Measuring Heat Stability of Resilient Flooring by Color Change<sup>1</sup>

This standard is issued under the fixed designation F 1514; 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 ( $\epsilon$ ) 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 elevated temperature 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.*

1.3 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

## 2. Referenced Documents

### 2.1 ASTM Standards:

- D 794 Practice for Determining Permanent Effect of Heat on Plastics<sup>2</sup>
- D 2244 Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates<sup>3</sup>
- E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods<sup>4</sup>
- E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method<sup>4</sup>

## 3. Significance and Use

3.1 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 processibility and product performance characteristics. The formulation of the compound can be varied considerably depending on the desired performance characteristics and methods of processing. See Practice D 794 for additional significance and use information.

3.1.1 Heat stability, which is resistance to discoloration

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

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 08.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 06.01.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 14.02.

from heat, is a basic requirement for processing and functional use.

3.1.2 This test method provides a means of measuring the amount of color change in flooring products when subjected to elevated temperatures over a period of time (functional use of the flooring product).

3.2 This test method is not intended to be a means of predicting the amount of color change that occurs during processing (manufacture).

3.3 This test method specifies that a sample is subjected to 158°F (70°C) for 7 days, and the color difference is measured by a spectrophotometer and expressed as  $\Delta E^*$  units.

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

## 4. Apparatus

4.1 *Circulating Air Oven*, which can be maintained at  $158 \pm 2^\circ\text{F}$  ( $70 \pm 1^\circ\text{C}$ ).

4.2 *Suitable Spectrophotometer or Colorimeter* with a minimum  $\frac{1}{4}$  in. (6.35 mm) diameter opening having both a cool white fluorescent (CWF) and daylight light (D-65) sources that measure color in CIE  $L^*$ ,  $a^*$ ,  $b^*$  using CIE 10° Standard Observer and Specular Included. See Test Method D 2244. When an individual color cannot be totally covered within the  $\frac{1}{4}$  in. spectrophotometer opening, then the largest spectrophotometer opening shall be used.

4.3 A suitable holder rack that separates samples a minimum  $\frac{1}{2}$  in. (12.70 mm) in a standing or vertical position.

## 5. Hazards

### 5.1 Cautions:

5.1.1 Do not stack specimens while being exposed to elevated temperatures.

5.1.2 Be sure each specimen is marked in the corner and on the back for easy identification.

5.1.3 Monitor temperature during duration of test in oven to ensure maintenance of proper temperature.

5.1.4 Be sure color measuring equipment is properly warmed-up and calibrated prior to use.

5.1.5 Be sure specimens are held flat when measuring color.

## 6. Procedure

6.1 Cut three specimens from each sample, approximately 2