



Designation: F1037 – 18 (Reapproved 2022)

## Standard Test Method for Visual Rating of Appearance of Resilient Floors<sup>1</sup>

This standard is issued under the fixed designation F1037; 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 is intended to provide a numerical rating system for classification of resilient floors during the various stages of their wear life in relation to their condition, as perceived by a knowledgeable user.

1.2 This test method is intended to allow comparison between two or more samples or groups of samples for differences in visual appearance.

1.3 This method provides recommended viewing conditions and lighting for rating visual differences between samples or groups of samples.

1.4 This method can be utilized to evaluate change in visual appearance before and after some specified test condition exposure, for example, in service wear due to foot traffic, or other tests where change in appearance might occur.

1.5 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

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

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee F06 on Resilient Floor Coverings and is the direct responsibility of Subcommittee F06.20 on Test Methods.

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### 2. Referenced Documents

2.1 *ASTM Standards*:<sup>2</sup>

D1436 Test Methods for Application of Emulsion Floor Polishes to Substrates for Testing Purposes  
F141 Terminology Relating to Resilient Floor Coverings

### 3. Terminology

3.1 See Terminology F141 for general Resilient terms and definitions, in addition to the more specific terms that have been defined below.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *appearance, n*—the collected visual aspects regarding the flooring material's surface, including color, texture, gloss, etc.

3.2.2 *color, perceived, n*—attribute of visual perception that can be described by color names, such as white, gray, black, yellow, brown, red, purple, etc., as this practice utilizes the term it is more of a visible color difference between two adjacent areas or samples.

3.2.3 *gloss, n*—a level of shiny or lustrous appearance resulting from the tendency of a flooring surface to reflect light at one angle more than at others. Resilient flooring surface gloss may range from very low (dull) to very high (shiny).

3.2.4 *qualified panel, n*—individual(s) who participate in comparative evaluation of a sample's appearance change, that represent the spectrum of having familiarity with the product, familiarity with maintenance of the product, and familiarity with the product's use; sometimes referred to as a knowledgeable user.

3.2.5 *surface scratches, n*—deterioration of a product's surface texture and appearance due to abrasive wear exposure.

3.2.6 *surface texture*—multi-level dimensioning of the flooring surface, which can be natural or artificially generated,

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

that provides aesthetic or functional use attributes, for example, mechanical or chemical embossing.

#### 4. Significance and Use

4.1 Ratings are developed by some subjective or comparative evaluation criteria, or both, of a sample(s) to some reference criteria or when compared to a control sample. These parameters generally include change in gloss, color, surface texture, alterations to pattern and possibly restorability of appearance with normal maintenance procedures, including the use of finishes or buffing. Rating is done by a qualified individual or preferably by a panel of qualified observers under specified lighting conditions in accordance with prescribed procedures.

#### 5. Apparatus

5.1 *Buffing Machine*, equipped with single or double brush (pad), soft fiber polishing brushes, and lamb’s wool pads or appropriate microfiber pad. When equipped with polishing brushes, the unit should deliver a nominal lineal velocity (loaded) of 1100 ft/min to 1400 ft/min (each brush) and a Dwell ratio of 190 ft<sup>2</sup> to 210 ft<sup>2</sup> (17 m<sup>2</sup> to 19 m<sup>2</sup>) per min at a pressure of 0.40 psi to 0.50 psi. When equipped with buffing pads, the unit shall deliver a nominal lineal velocity (loaded) of 1100 lineal fpm to 1400 lineal fpm (each pad) and a Dwell ratio of 500 ft<sup>2</sup> to 550 ft<sup>2</sup> (45 m<sup>2</sup> to 50 m<sup>2</sup>) per min at a pressure of 0.15 psi to 0.20 psi.

5.2 *Scrub Brush*, approximately 2½ in. by 7 in. (63 mm by 178 mm) with nylon bristles approximately 1¼ in. (32 mm) long.

5.3 *Cellulose Sponge*, approximate dry dimension 8 in. by 4¼ in. by 1 in. (203 mm by 108 mm).

5.4 *Lay-up Board*, approximately 4 ft by 8 ft (1.2 m by 2.4 m) mounted at suitable easy viewing angle, for example, 0 to 30°, with bottom and side reference support edges. See Fig. 1 as an example lay-up table.

#### 6. Reagent

6.1 *Cleaning Solution*, shall be neutral cleaner as recommended by the flooring manufacturer and shall be prepared in sufficient quantity in accordance with the manufacturer’s instructions.

#### 7. Sampling, Test Specimens, and Test Units

7.1 Specimen size will vary, generally as a function of individual tile or plank size. It may also vary depending upon use, that is, simple comparative differences, does sample (tile or plank) match standard, or if all samples within a particular sample set are of equal visual quality, etc. The specimen or specimen panel (group of tiles or planks of the same material) size can vary based on desired lay-up size, for example, the particular test evaluation, the package content size, etc., or whatever is utilized as part of a standard sampling procedure.

7.2 For comparison before and after something is done to a specimen or specimen set, for example, wear exposure test, the specimen size can vary as desired. A typical size panel would be 24 in. by 24 in. (610 mm by 610 mm) and contain four 12 in. by 12 in. (305 mm by 305 mm) specimens. In addition, a companion specimen must be retained and stored in a location where its appearance will not be altered. This specimen will be used for comparison purposes throughout the test cycle. If a specimen or specimen panel set has been exposed to use or abrasive wear conditions then each specimen or specimen panel is to be cleaned in accordance with manufacturer’s direction or otherwise maintained using the washing procedure in 8.1. The finish or restorative procedure, as recommended by the manufacturer, shall be followed before each rating session. One may choose to perform the restorative maintenance procedure to the original unexposed samples of these products in order to more closely match expected maintained gloss equivalency. Those no-finish floors whose appearance, through exposure to traffic, has deteriorated to an overall rating of “3” or more shall be restored with either the finish procedure (no



FIG. 1 Lay-up Table

samples receive double-finish) (see 8.2) or the buffing procedure (see 8.3). The choice of restorative maintenance is determined by the manufacturer's recommended procedure. All cleaning and restorative maintenance procedures shall be performed on the entire sample.

## 8. Procedure

8.1 Mix the cleaning solution and stir thoroughly.

8.1.1 Soak brush in solution for 1 min.<sup>3</sup>

8.1.2 Apply enough solution so that the panel is covered with a thin coat of solution. Allow the solution to remain undisturbed for 3 min.

8.1.3 Dip brush in solution, then scrub the panel 30 times in each direction with enough pressure to slightly bend the bristles. Localized, abnormal stains such as chewing gum, ground-out cigarettes, tar, or other spots considered abnormal in residential environment may be given special attention. Overall stains, discoloration, or soil that lodges in deep embossments should not be given special treatment.

8.1.4 With the cellulose sponge wrung out in clear, lukewarm water, remove the cleaning solution. Rinse sponge in clear, lukewarm water, wring sponge out lightly, then go over the panel to rewet the surface. Rinse out sponge again in clear water. Wring out tightly and remove as much rinse water as possible.

8.1.5 Allow surface to air dry for 1 h.

8.2 *Finish Procedure, if required*—After washing, apply to each individual sample to receive finish, a finish in the following manner. Use a fresh supply of an acrylic floor finish or an equivalent material appropriate for the specific type of floor. Apply the finish in accordance with Method B of Test Methods D1436.<sup>4</sup>

8.3 *Buffing Procedure*—Following the washing procedure outlined in 8.2, samples of resilient floor coverings whose manufacturers' recommend buffing as the restorative maintenance should be treated according to the following buffing procedure.<sup>5</sup>

8.3.1 Buff each sample with the polishing brushes, using a left to right to left motion covering the entire sample from top to bottom to top again, using overlapping strokes, in 1 min. No excess pressure or weight should be used on the buffer.

8.3.2 Repeat 8.3.1, using an overlapping top to bottom to top motion, covering the entire sample fully from left to right to left in 1 min.

8.3.3 Repeat the bidirectional buffing technique above, using lamb's wool pads on the buffer.

8.3.4 *Washing Lamb's Wool Pads*—For purposes of this test, the lamb's wool pads will be washed every time the equivalent of 2016 in.<sup>2</sup> (13 104 cm<sup>2</sup>) samples are buffed according to this procedure.

<sup>3</sup> A sponge with scrubbing capabilities may be substituted for the scrub brush and cellulose sponge.

<sup>4</sup> Suitable cross linked acrylic finish as recommended by resilient flooring for restorative maintenance of their resilient flooring.

<sup>5</sup> Rug Shampooer/Floor Polisher as recommended by resilient flooring manufacturer, suitable for restorative buffing of resilient floor surface; speed less than 1500 r/min.

8.3.4.1 Pads are to be washed in a mild detergent<sup>6</sup> and cold water (2 heaping teaspoons (10.0 g) per gallon (3.8 L) of water), rinsed in cold water and air dried (do not "wring out" pads).

## 9. Observer Panel

9.1 The panel of observers shall consist of at least three people. One-third of the panel shall consist of a person(s) technically trained in the composition and use of household cleaning products, such as a home economist or chemist. One-third of the panel shall consist of a person(s) trained in the technical characteristics and testing procedures used on resilient flooring, such as an engineer or chemist. One-third of the panel shall be a non-technically trained person(s) who regularly maintains resilient floors in a home. No panel member shall be color blind. The maintenance person shall not be included in the observer panel. Members shall be carefully instructed on the scoring procedure and shall have had prior experience of at least a complete rating of one sample before establishing a valid scored rating.

9.2 Individual panel observers are provided with separate data sheets and are to separately rate gloss, color, surface texture, along with pattern change and restorative effects of maintenance, if applicable. They may do their rating simultaneously, but should not discuss or compare ratings. If any sample requires restorative maintenance, all specimen or specimen panels are returned to the exposure site only after restorative maintenance is complete and ratings for restorative maintenance are made. Scoring is in accordance with 11.1.

## 10. Sample Arrangements and Lighting Conditions

10.1 Samples are to be washed, waxed where appropriate (See Section 8 and Fig. 2) and assembled with the viewing template as outlined in this section.

10.1.1 Place the flooring panels to be rated horizontally on a freestanding 30 in. (762 mm) high table, the top of which is smaller than the sample panels. This arrangement will enable observers to walk around the sample and view it from various angles and positions.

10.1.2 Although it is desirable that the flooring samples or the panel containing the flooring samples be portable to permit placement in ideal lighting conditions, it is acknowledged that, in the case of installed flooring, this may not be possible. In these instances, efforts must be made to simulate the lighting conditions specified in 10.2 and 10.2.1.

10.1.3 Prepare a template that allows viewing of the main portion of the sample area, but masks its edges (usually ½ in. (13 mm) is sufficient). Immediately adjacent, and as part of the template, is a second opening of identical dimensions. The purpose of the second opening is to serve as a comparison frame for the original, unexposed sample. See Fig. 3 for a sketch of such a template that would be used where four 12 in. by 12 in. (305 mm by 305 mm) specimens are attached to a 24 in. by 24 in. (610 mm by 610 mm) base.

<sup>6</sup> Mild detergent suitable for cleaning scrubbing brushes/pads and buffing pads. Rinse and let dry afterwards.

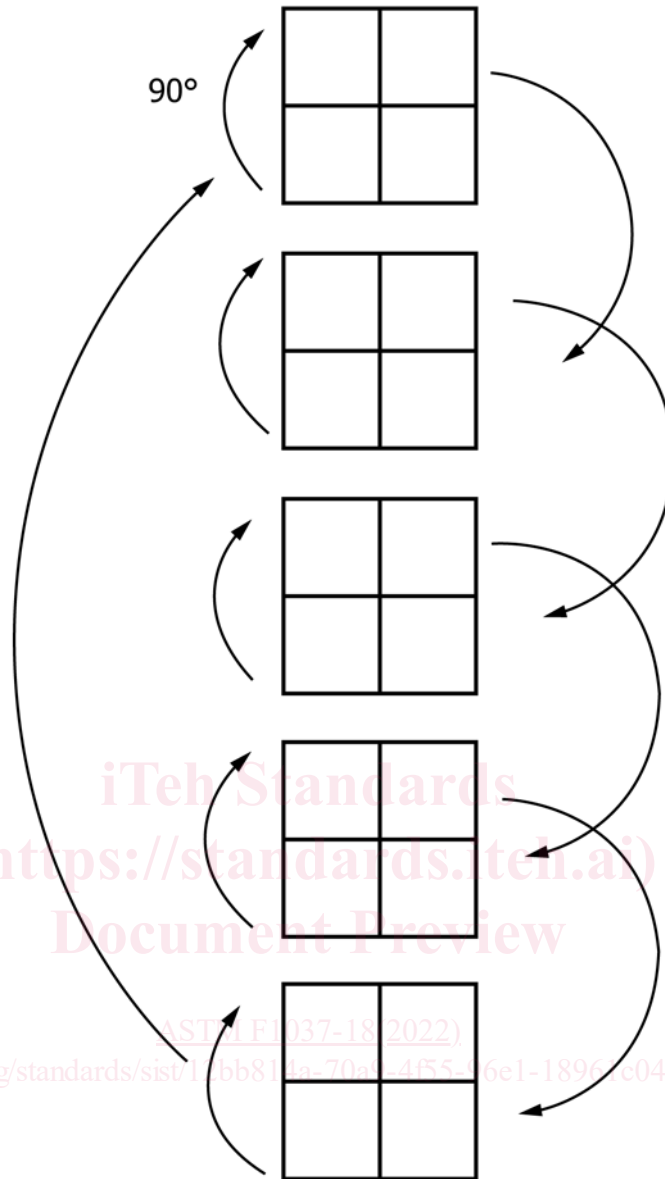


FIG. 2 Suggested Rotation Procedure for Panels Under Exposure

10.2 Principal lighting shall be provided by overhead fluorescent lights at 3000 °K. (warm white). Illumination shall be uniform and not less than 150 ft candles at the sample surface.

10.2.1 A secondary source of light shall be established to enable observers to evaluate gloss. The source may be an uncurtained north facing window, a fluorescent fixture placed facing the samples, or several incandescent spotlights. Color value is not critical but should not be of extreme departure from the primary source. The secondary source should be 5 ft to 10 ft (152 cm to 305 cm) from the floor.

**11. Rating**

11.1 Rating is established by totaling the scores for each sample of gloss, color, surface texture, pattern, and restorative maintenance by each observer. Total scored is then converted to a final visual rating in accordance with the conversions as follows:

Total Score	Final Visual Rating
0	1—Excellent
1 to 4	2—Good
5 to 8	3—Acceptable
9 to 11	4—Poor
12 to 16	5—Unacceptable

NOTE 1—Fractional averages will be rounded to the nearest whole number.

NOTE 2—Scoring for each parameter is to be made as a consideration of the difference between the exposed sample and the original unexposed sample or the sample between the control sample(s) and a specimen(s) being evaluated for how closely it (they) match to the control sample.

11.2 For each sample, the ratings of individual observers are averaged.

11.3 The final rating is developed by conversion of total individual parameter scores (see 11.1). The following final ratings, from 1 to 5, indicates the general condition of the flooring.