



# Standard Test Method for Visual Rating of Appearance of Resilient Floors After In- Service Exposure to Foot Traffic<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.

<sup>ε1</sup> NOTE—Editorial changes were made in June 2016.

## 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 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 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 standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

## 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 *Definitions of Terms Specific to This Standard:*

3.1.1 *surface texture*—surface imperfections such as deep scratches, indents, or changes in embossing texture.

## 4. Significance and Use

4.1 Ratings are developed by subjective, comparative, evaluation of exposed samples to original unexposed specimens of those parameters experience has shown to be the most important in the consumers' minds in evaluating the perfor-

<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 F06.30 on Test Methods - Performance.

Current edition approved Dec. 1, 2010. Published May 2016. Originally approved in 1987. Last previous edition approved in 2010 as F1037-10. DOI: 10.1520/F1037-10R15E01.

<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.

mance of a walking surface. These parameters are a change in gloss, color, surface texture, alterations to pattern and restorability of appearance with normal maintenance procedures, including the use of finishes or buffing. Rating is done by a panel of qualified observers under specified lighting conditions in accordance with prescribed procedures.

## 5. Apparatus

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

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

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

## 6. Reagent

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

NOTE 1—For flooring test specimens maintained with polish, the cleaning solution shall be capable of removing the polish.

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

7.1 Specimen size can vary as desired. A typical size panel would be 24 by 24 in. (610 by 610 mm) and contain four 12 by 12 in. (305 by 305 mm) similar or different panels to be tested. 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. Each sample is to be cleaned in accordance with the washing procedure in 8.1. The finish procedure shall be followed on all resilient flooring samples designed to be

maintained with finish before each rating session. The original unexposed samples of these products shall be finished also. 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 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.

7.2 Before evaluation, each sample shall be prepared using the procedure given in Section 8. This procedure is intended to remove all dirt and finish (if present).

## 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, luke-warm 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*—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.

<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.

8.3.2 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.

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, pattern change and restorative effects of maintenance. They may do their rating simultaneously, but should not discuss or compare ratings. If any sample requires restorative maintenance, all 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. 1) 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.

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

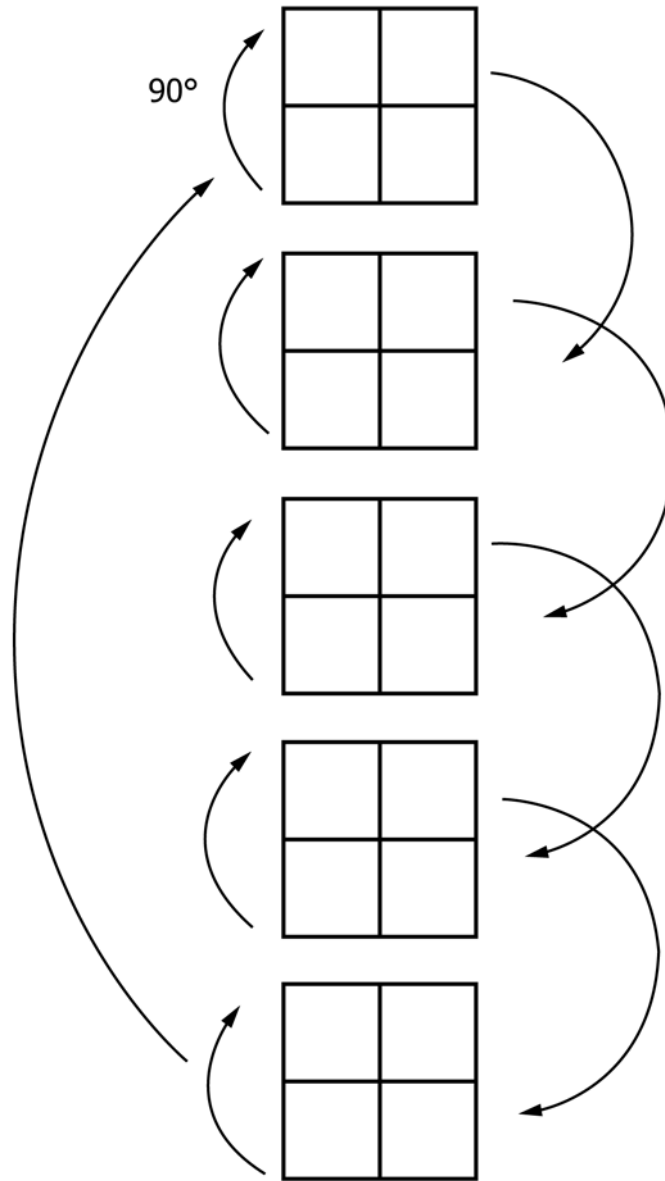


FIG. 1 Suggested Rotation Procedure for Panels Under Exposure

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. 2 for a sketch of such a template that would be used where four 12 by 12 in. (305 by 305 mm) samples are attached to a 24 by 24 in. (610 by 610 mm) base.

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 to 10 ft (152 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 2—Fractional averages will be rounded to the nearest whole number.

NOTE 3—Scoring for each parameter is to be made as a consideration of

(610 × 610 mm) 24" × 24"

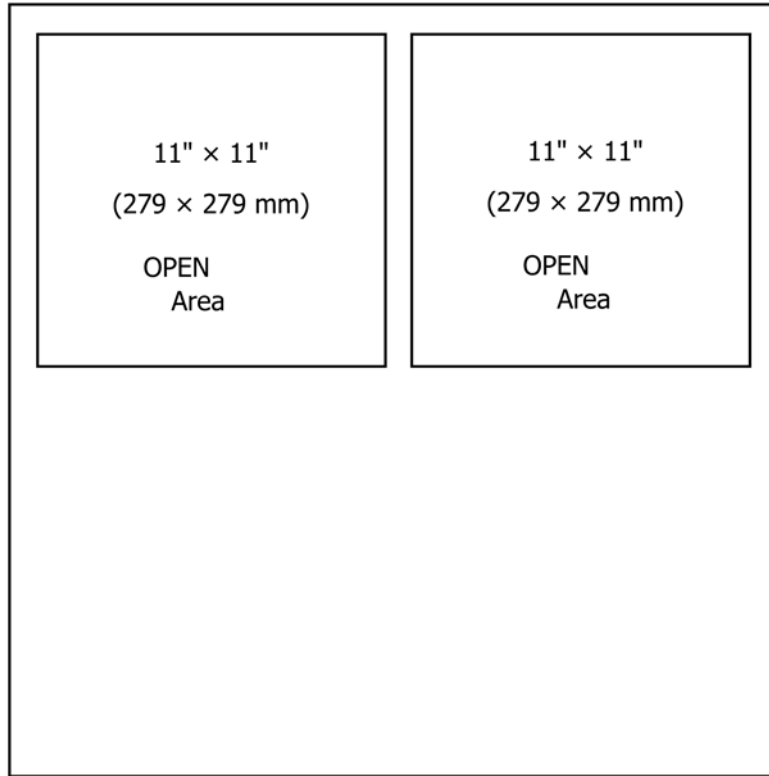


FIG. 2 Template, 24 by 24 in. (610 by 610 mm)

the difference between the exposed sample and the original unexposed 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.

- 1 Virtually unchanged from the original (total score of 0).
- 2 Slight change in gloss, coloration, or surface texture, no change in pattern. The following is still highly acceptable in appearance. Restorative maintenance will return sample to original appearance (total score of 1 to 4).
- 3 Significant changes in gloss, coloration, or surface texture, no change in pattern. Appearance might be objectionable to a very “fussy” housekeeper. Restorative maintenance improves the appearance but will not return sample to original appearance (total score of 5 to 8).

NOTE 4—There must be no change in pattern for a sample to receive a final rating of 3 or less.

4 Significant degradation of surface involving change of gloss, color, surface texture, or alteration of the pattern, or a

combination thereof. Many housekeepers would desire replacement. Restorative maintenance does little to improve appearance (total score of 9 to 11).

5 Major damage such as total loss of gloss, objectionable change of pattern, surface texture, color or a combination thereof. Most housekeepers would consider the floor no longer serviceable, worn out, and in need of replacement. Restorative maintenance does not improve appearance (total score of 12 to 16).

11.4 The restorative maintenance scores are shown in Fig. 3.

## 12. Precision and Bias

12.1 Round robin testing indicates that even though this is a subjective test method, a satisfactory correlation does exist between product performance and the ability of the raters to distinguish among the products.

## 13. Keywords

13.1 appearance; gloss; maintenance; resilient floors; visual rating



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