

Assessment of Carpet Surface Appearance Change using the CRI Reference Scales

1. Scope

- 1.1 Assessment of change of surface appearance due to exposure from traffic, either for installed carpet or laboratory samples, or from mechanical traffic simulators, is facilitated by use of reference scales developed by the Carpet and Rug Institute Performance Standards Committee.
- 1.2 The reference scales are based on representative carpet descriptions covering a comprehensive range of carpet products.

2. Referenced Documents

- 2.1 ASTM Standards:
 - D-5251 Standard Practice For Operation of the Tetrapod Walker Tester
 - D-5252 Standard Practice For Operation of the Hexapod Drum Tester
 - D-5417 Standard Practice For Operation of the Vettermann Drum Tester
 - D-5684 Standard Terminology Relating to Pile Floor Coverings
 - D-6119 Creating Surface Appearance Change in Pile Yarn Floor Covering from Foot Traffic

3. Terminology

3.1 Definitions:

- 3.1.1 change in surface appearance, n. - for pile yarn floor coverings, the cumulative change in surface appearance between unexposed and exposed specimens due to crushing, loss of tuft definition, and matting.
- 3.1.2 crushing, n. - in pile yarn floor covering, restorable or non-restorable loss of pile thickness due to traffic.

Discussion - Crushing due to static load is excluded from this definition.
- 3.1.3 matting, n. - for pile yarn floor coverings, loss of pile definition of a textile floor covering due to entanglement and compression of pile fibers.
- 3.1.4 loss of tuft definition, n. - the bursting, opening, and untwisting of the pile yarn and/or decrimping of the fibers in the surface pile of a pile yarn floor covering.

4. **Apparatus**

- 4.1 CRI Reference Scales¹ - A series of imaged standards ranging from 5 (no change) to 1 (severe change) showing degrees of change in surface appearance is available for the following carpet constructions:

<u>Scale</u>	<u>Description</u>
CRI - 1	Saxony Cut-Pile
CRI - 2	Berber, Loop
CRI - 3	Commercial Loop, Low Profile
CRI - 4	Cut Pile Commercial Plush
CRI - 5	Cut Pile Frieze
CRI - 6	Tip Sheared with pattern
CRI - 7	Loop Pile Pattern

NOTE: This third series of scales is supplied color images with intermediate half-steps.

- 4.2 Option grading masks - made from cardboard or other suitable material used in viewing the unexposed and exposed specimens. These masks shall be non-reflective dark gray color with an aperture of 300 mm x 200 mm (12 in. x 8 in.) for use in grading laboratory drum tested samples and 350mm x 350 mm (14 in. x 14 in.) for floor traffic samples.
- 4.3 Illumination system for assessment - either portable or fixed lighting may be used which provides for 1500 lux \pm 100 lux (~150 lumens per square foot) at the surface illumination with predominance of the light from directly above. Either North Sky light or Cool White fluorescent is satisfactory.
- 4.4 Vacuum cleaner - top-loading, upright vacuum cleaner with a rotating brush.

5.0 **Procedure**

- 5.1 All specimens should be vacuumed and allowed to recover at normal room conditions, undisturbed, for a minimum of 16 hours prior to grading.

NOTE - Do not stack carpet specimens. Care should be exercised to prevent contact with the pile surface.

- 5.2 Place unexposed and exposed specimens under and perpendicular to the specified lighting such that the unexposed specimen is adjacent to the

¹ Available from Carpet and Rug Institute, P. O. Box 2048, Dalton, GA 30722

- trafficked portion of the exposed specimen. Make sure both specimens are oriented the same with regard to pile direction.
- 5.3 Place the appropriate mask, if used, over the specimens located in such a way that one-half of the aperture of the mask reveals the unexposed specimen and the other half reveals the maximum wear area of the exposed specimen.
 - 5.4 Select the appropriate reference series which most nearly resembles the construction of the pile yarn floor covering being assessed.
 - 5.5 Observing such features as crushing, loss of tuft definition, and matting, choose the reference scale grade which most nearly resembles the degree of surface appearance change of the exposed specimen.

NOTE: Some specimens may display noticeable variation in appearance change within same trafficked area. If these exist, and are considered as a rating variable, note in the report the type of variation, e.g., pile reversal, small spot distortion, color change, fuzzing, or other.

- 5.6 At least three graders shall grade the specimens. The graders shall each observe the specimens from a distance of 0.5-1.0 m (approximately 1.5 ft. - 3 ft) at a 45°-90° angle from the specimen. Graders should observe specimens from various directions and rate the highest degree of surface change.
- 5.7 Each grader shall grade each specimen independently of the other graders.
- 5.8 Record the individual ratings for each specimen to the nearest 0.5 unit.

6.0 Report

- 6.1 Report the following information:
 - 6.1.1 Average rating of all graders for specimens trafficked to the nearest 0.1.
 - 6.1.1.1 If tested in machine direction and cross-machine direction, average ratings for each direction to the nearest 0.1.
 - 6.1.3 Any rating variables as noted in 5.5.
 - 6.1.4 The number of foot traffic units, or other units applicable to other laboratory tests.
 - 6.1.5 Detail any deviations from this practice.

Note: This document revised 5-27-2003 to incorporate revision of new image scales developed by CRI. Previously supplied scales are usable, but reports should reflect that the scales are not the current issuance from CRI.