

## **Standard Laboratory Test Practice For Measurement Of Surface Appearance Change Of Textile Floor Covering As A Result Of Interim Maintenance**

### **1. Scope**

- 1.1 This test practice provides a laboratory test for the measurement of surface appearance change of textile floor covering as a direct result of a specific interim maintenance process.
- 1.2 This test practice is applicable to all interim maintenance systems.
- 1.3 This test practice may involve hazardous materials, operations, and equipment. This test practice does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this test practice to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

### **2. Reference Document**

- 2.1 ASTM D5684 Terminology Relating to Pile Yarn Floor Coverings

### **3. Definitions**

- 3.1 Interim maintenance - a procedure conducted between extraction cleanings designed to improve carpet appearance without significantly limiting occupant usage.
- 3.2 Interim maintenance equipment - all equipment, vacuums, brushes, pads, etc. used to perform interim maintenance.
- 3.3 Interim maintenance chemical - a specific chemical agent, applied during the interim maintenance procedure.
- 3.4 Interim maintenance procedure - published operating instructions that outline in chronological order how the interim maintenance is performed.

### **4. Precision & Bias**

- 4.1 No precision and bias has been established for this practice.

## 5. Significance & Use

- 5.1 This test practice will determine the degree of surface texture change caused by the interim maintenance system on a standardized floor covering. The degree of surface texture change generated in the laboratory practice may differ from that in home/commercial installations due to the type of interim maintenance system, variations in floor covering styles, soil and other solid particulate compositions which may be present, the process employed by individual operators, and other factors.
- 5.2 In order to provide a uniform basis for measuring the performance of interim maintenance systems, standardized floor covering materials are employed in this practice.

## 6. Apparatus

- 6.1 Conditioned laboratory at  $21 \pm 3^{\circ}\text{C}$  ( $70^{\circ}\text{F} \pm 5^{\circ}\text{F}$ ) and  $50\% \pm 5\%$  relative humidity to be used for sample preparation and testing.
- 6.2 Conveyor with a flat rigid bed length minimum of 4.3 meters (14 feet) and width of 91.5 cm (36 inches) minimums. The rigid bed must have a 31 cm x 31 cm (12 inch x 12 inch) hole cut in center. The conveyor must be capable of maintaining specified test speed in both forward and reverse directions. The conveyor must be equipped with brackets to hold the test material stationary during testing.
- 6.3 Tachometer used to measure conveyor speed in feet/second.
- 6.4 Carpet template comprised of the same material as test material a minimum of 10 cm (4 inch) wider than the head of the test equipment. The carpet template is mounted to a rigid substrate panel using double sided tape. The carpet template must have a 31 cm x 31 cm (12 in x 12 in) square hole cut in the center.
- 6.5 30.5 cm x 30.5 cm rigid panel inserts
- 6.6 CRI Reference photograph for Interim Maintenance Equipment Surface Appearance Change<sup>1</sup>
- 6.7 Illumination System – Capable of providing a minimum of 1500 lux  $\pm$  100 lux of north sky light or equivalent light source.
- 6.8 Light Meter capable of measuring up to 1500 lux.

## 7. Interim Maintenance Test Material

### 7.1 Commercial Cut Pile

<b>Style</b>	J0064
<b>Weight</b>	30 oz/sq yd $\pm$ 5%
<b>Color</b>	00100
<b>Pile Height</b>	0.281 inch
<b>Gauge</b>	1/10
<b>Stitches/Inch</b>	9
<b>Yarn</b>	Nylon
<b>Fluorochemical</b>	No

### 7.2 Commercial Loop Pile

<b>Style</b>	10203
<b>Weight</b>	30 oz/sq
<b>Color</b>	00201
<b>Finished Pile Thickness</b>	0.115 Inches
<b>Gauge</b>	1/10
<b>Stitches/Inch</b>	10
<b>Yarn</b>	Nylon
<b>Fluorochemical</b>	No

## 8. Conditioning

- 8.1 Test room - temperature and humidity are maintained in standard laboratory conditions,  $21 \pm 3^{\circ}\text{C}$  ( $70^{\circ}\text{F} \pm 5^{\circ}\text{F}$ ) and  $50\% \pm 5\%$  relative humidity in which all conditioning, sample preparation, and testing is performed.
- 8.2 All components involved in the test shall remain and be exposed in the standard laboratory conditions for a minimum of 16 hours prior to the start of the test.

## **9. Standard Test Material**

- 9.1 Standard test material shall conform to Section 7.
- 9.2 Cut two 30.5 cm x 30.5 cm (12 inch x 12 inch) specimens of the test material.
- 9.3 Mount the 30.5 cm x 30.5 cm (12 inch x 12 inch) test specimen onto the same rigid panel substrate insert used for the conveyor template by attaching a perimeter of double sided tape.
- 9.4 Identify each test specimen with test identification number.

## **10. Interim Maintenance Equipment Conditioning**

- 10.1 Precondition all new equipment, brush rolls, pads etc. per manufacturer's specified instructions.
- 10.4 Adjust and operate the test equipment in accordance with manufacturer's specifications for use on the test carpet. Contact the manufacturer if no instructions are given.

## **11. Procedure**

- 11.1 Prepare test specimen in accordance to Section 9.
- 11.2 Install conditioned interim maintenance equipment on the template 10 cm – 15 cm (4 inches - 6 inches) in front of the test specimen.
- 11.3 Calibrate conveyor speed at 1.0 ft/second or as directed in manufacturer instructions.
- 11.4 Set conveyor counter for specified number of passes.
- 11.5 Place test specimen into template on conveyor with pile direction if present, leaning towards the interim maintenance equipment.
- 11.6 Energize test equipment.

- 11.7 Activate back and forth conveyor movement until the manufacturer's specified number of passes that comprise one interim maintenance cycle has been reached. Ensure that each direction change is made with the equipment head on the template material and not on the test specimen.
- 11.8 Rotate the test specimen/insert 90° prior to each additional interim maintenance cycle until the total number of test cycles are applied.
- 11.9 De-energize interim maintenance equipment and remove test specimen.

## 12. Evaluation

- 12.1 Assess the level of appearance change within 24 hours of the conclusion of the test using the CRI Reference Photograph for Interim Maintenance Equipment Surface Appearance Change.
- 12.2 Place unexposed and exposed specimens under specified light source such that the unexposed and exposed specimens are adjacent with pile lean in the same direction.
- 12.3 Observe pile distortion features such as loss of tip definition, matting and fuzzing, etc.
- 12.4 Determine if the degree of surface appearance change between the exposed and unexposed specimens is worse than, equal to or better than the surface reference change represented in the CRI<sup>1</sup> reference photograph.
- 12.5 A minimum of three assessors shall independently grade the specimen(s). The assessors shall observe the specimens from a distance of 0.5 - 1.0 meter, (approximately 1.5 ft. – 3.0 ft.) at a 45° to 90° angle from the specimen. Assessors shall observe specimens from various directions and determine the rating based upon the highest degree of appearance change.

---

<sup>1</sup> Source: Carpet and Rug Institute, , 100 S. Hamilton Street, Dalton, Georgia 30720

### 13. Report

- 13.1 Interim maintenance equipment manufacturer, chemical agent, application rate and dilution ratio, specific equipment model, brush or pad specifics, chemical type and other descriptive information.
- 13.2 Complete test material description, fiber type, pile weight and pile height.
- 13.3 Speed of travel of interim maintenance equipment expressed in feet/second.
- 13.4 The number of passes the interim maintenance equipment ran over the test carpet to complete one interim cleaning.
- 13.5 The total number of interim cleaning procedures performed.
- 13.6 Record and average the individual assessors' ratings and report the rating of surface appearance change in the test specimen as better, equal or worse in appearance in accordance with Table 1.

**TABLE I**  
**Surface Appearance Change Rating Scale**

Better	1
Equal	0
Worse	-1

**NOTE:** A panel of carpet manufacturing technical personnel performed a blind examination of multiple textile floor covering samples with varying degrees of surface appearance change caused by multiple passes of interim maintenance equipment in a controlled environment. Based upon current appearance retention warranties a maximum level of appearance change caused by the interim maintenance equipment process was established.