

SOA-V-501 Surface Appearance Change of Vacuums

1. Scope

- 1.1. This test method provides an evaluation of surface appearance change in carpet as a direct result of the vacuuming process.
- 1.2. This test method applies to all vacuums tested in the SOA program.
- 1.3. This test method applies to both commercial and residential vacuums.

2. Safety

- 2.1. This practice does not purport to address all the safety concerns, if any, associated with its use. It is the responsibility of the user of this practice to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

3. References

- 3.1. ASTM D7330 Standard Test Method for Assessment of Surface Appearance Change in Pile Floor Coverings Using Standard Reference Scales
- 3.2. CRI Reference Scale - CRI-1 Saxony Cut Pile Half-Steps (Residential Testing)
- 3.3. CRI Reference Scale - CRI-4 Commercial Cut Pile Half-Steps (Commercial Testing)
- 3.4. SOA Test Carpet Specifications

4. Apparatus and Materials

- 4.1. Conveyor with a minimum bed length of 10 feet and stroke of 5 feet and minimum bed width of 35 inches. Conveyor must be capable of maintaining specified test speed both forward and reverse. Conveyor must be equipped with brackets to hold the test equipment stationary, exert no horizontal or vertical force.
- 4.2. Carpet mounting platform comprised of the same material as test carpet with a 12 inch by 12 inch cut-out to be mounted on the conveyor.
- 4.3. Tachometer used to measure conveyor speed in feet/second
- 4.4. CRI Surface Appearance Reference Scales (CRI-1 and CRI-4)
- 4.5. Illumination System – Capable of providing a minimum of 1200 ± 300 lux of north sky light or cool white fluorescent light source.
- 4.6. Voltage Meter Regulator

5. Test Specimen

- 5.1. Test Carpet Description: Residential Cut Pile or Commercial Cut Pile (Residential or Commercial usage type as specified on the COC) (See SOA Test Carpet Specifications)
- 5.2. Cut two carpets 12 inches by 12 inches. Mark pile direction on both carpets.
- 5.3. Mark the specimens with the test identification number.

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- 5.4. Condition prepared samples in test room a minimum of 16 hours prior to testing and no more than 72 hours.

6. Test Format

- 6.1. Condition Test Vacuum (unless previously conditioned in prior testing)
- 6.1.1. Energize test vacuum in a stationary position at the rated voltage +/- 1% and rated frequency with filter in place for 30 minutes.
 - 6.1.2. If vacuum is equipped with a brush roll, the brush roll should not be engaged with the floor surface during conditioning.
 - 6.1.3. Canister type vacuums shall be conditioned with the hose attached to the unit.
 - 6.1.4. Condition a battery vacuum or battery attachment for 30 minutes.
- 6.2. Mount test carpet sample on carpet mounting platform using double sided tape. Present test carpet with pile lay towards the vacuum. (Retain additional carpet sample to be used as control for grading.)
- 6.3. Install vacuum with new bag on the conveyor.
- 6.3.1. Position vacuum on the carpet mounting platform 4-6 inches in front of the carpet test specimen.
 - 6.3.2. Mount the vacuum unit in place on the conveyor with the handle in an inclined operating position at the vertical handle height of 31.5 inches above the test material.
 - 6.3.3. If vacuum has adjustable height settings, then adjust height so vacuum contacts carpet surface without pressing into the pile.
- 6.4. Vacuum Test Carpet
- 6.4.1. Determine number of passes required based on usage type specified on the COC.
 - 6.4.1.1. Residential - 200 passes
 - 6.4.1.2. Commercial - 900 passes
 - 6.4.2. Verify conveyor speed is at the specified 1.8 feet per second.
 - 6.4.3. Set conveyor counter at 50 passes.
 - 6.4.4. Energize test vacuum for 2 minutes at rated voltage prior to activating conveyor.
 - 6.4.5. Activate continuous back and forth conveyor movement until 50 passes are achieved. Make sure that each pass begins and ends on the mount and not on the test carpet.
 - 6.4.6. Rotate test carpet 90 degrees after each set of 50 passes so the test carpet is vacuumed from each side.
 - 6.4.7. Return vacuum to starting position, de-energize vacuum and remove test sample once total number of passes are achieved.
- 6.5. Remove test sample.
- 6.6. Condition test carpet and control carpet in test room a minimum of 16 hours prior to evaluation and no more than 24 hours.



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7. Evaluation

- 7.1. Grade test carpet compared to control carpet using the CRI Surface Appearance Reference Scales under specified light source. Ensure that test carpet and control carpet pile lay is in the same direction.
- 7.2. Step 7.1 above is completed by three different trained technicians according to ASTM D7330.

8. Report

- 8.1. The identifying information for the vacuum (Manufacturer, product name and model, COC number, serial number, and description of any attachments used)
- 8.2. Record date carpet was vacuumed.
- 8.3. If vacuum height is adjustable, record setting used for testing.
- 8.4. Record vacuum test speed and test voltage.
- 8.5. Record total number of vacuum passes.
- 8.6. Record each grade assigned from each of the three raters.
- 8.7. Record average grade.
- 8.8. Report any deviations from this test method.