

**1. Scope**

- 1.1 This test method describes laboratory procedures used for evaluating carpet cleaning solutions for the Seal of Approval (SOA) program.
- 1.2 This method details procedures for the evaluation of cleaning effectiveness of cleaning solutions in removing specified stain agents.
- 1.3 This method applies to Spot Remover and Pet Stain & Odor Solutions only.

**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 AATCC Evaluation Procedure 2 – Gray Scale for Staining
- 3.2 ASTM D5684 Terminology Relating to Pile Yarn Floor Coverings
- 3.3 AATCC LP4 Laboratory Procedure for Synthetic Soil
- 3.4 SOA Test Carpet Specifications
- 3.5 SOA S-100 Preparation of Solution and Test Method for pH and Optical Brightener

**4. Terminology**

- 4.1 Spot Remover - a cleaning solution sprayed on an isolated stained area of carpet. Cleaning solutions referencing pets in the Product Name or Description are categorized as Pet Stain & Odor solutions (see below.)
- 4.2 Pet Stain & Odor Solution – a cleaning solution sprayed on an isolated pet-stained area of carpet.
- 4.3 Stain – an area of discoloration that penetrates the carpet surface.
- 4.4 Grade – the number assigned to a test specimen resulting from comparison to a scale.

## 5. Apparatus and Materials

- 5.1 Staining ring - 3.8 cm (1.5 in) diameter 3.0 cm (1.2 in) height
- 5.2 Trigger pump spray bottle with adjustable spray nozzle
- 5.3 Measuring cup or beaker capable of measuring 0.5 ml increments
- 5.4 Paper towels - white absorbent paper towels
- 5.5 Digital thermometer capable of measuring range 40°to 80° C
- 5.6 AATCC Gray Scale for Staining
- 5.7 Illumination System capable of providing a minimum of 1000 ± 50 lux (100 lumens/sq. ft) of north sky light or equivalent light source.
- 5.8 Staining Agents listed in Table 1 and Table 2
- 5.9 Distilled water

## 6. Test Specimen

- 6.1 Test Carpet Description: Residential Cut Pile (See SOA Test Carpet Specifications)
- 6.2 Two test carpets shall be taken of appropriate size to accommodate a minimum of eight (8) staining agents applied three times each. An 18 in. x 26 in. sample, or larger, is recommended for each test sample.

## 7. Test Format

- 7.1 Review COC for additional cleaning instructions prior to following the test method below. Follow cleaning instructions in the COC if provided. If no cleaning instructions are provided, follow the test method as written.
- 7.2 Staining agents and the application quantities for each are listed in the applicable table based on solution type. Stains should be at least 6.5 cm (2.5 inches) apart.
- Spot Remover (See Table 1)
  - Pet Stain & Odor (See Table 2)
- 7.3 Pour the staining agents which have been diluted in accordance with the applicable table into the spray bottle and adjust the nozzle to achieve a fine mist. Hold the spray nozzle in the center of the staining ring close enough to avoid spraying outside the ring. Two full pumps of the spray trigger should apply 2.5 ( $\pm$  0.5) mL of the liquid staining agents.
- NOTE:** It may be necessary to test the stain application quantity by pre-spraying into a measuring tube or cup.
- 7.4 The staining ring should be held in place until the staining agent has been absorbed into the carpet pile. Rinse staining ring with water to remove residual staining agents between each application.
- 7.5 Each staining agent is applied to the test carpet three times.
- 7.6 For stain removal evaluations it is required that 1 test carpet is prepared for stain removal using the cleaning solution and 1 test carpet for stain removal using water only.
- 7.7 Place the stained carpet panel on a non-absorbent surface and allow 24  $\pm$  2 hours for substrate to dry before beginning the stain removal procedure.
- 7.8 Remove any solid staining agent residues which may have formed on the pile surface as a result of drying. A bone scraper, spatula, or equivalent tool can be used to gently scrape away the solid residue without damage to the pile fiber.
- 7.9 Prepare cleaning solution in accordance with SOA S-100 Preparation of Solution and Test Method for pH and Optical Brightener.
- 7.10 The cleaning solution is applied to each stain and cleaning is done in accordance with the cleaning instructions provided on the COC. Solutions may be applied a maximum of two applications.
- 7.11 Clean each stain individually and completely before proceeding to another stain. Saturate the stain with the cleaning agent and allow to dwell for 2-3 minutes.
- 7.12 Blot the stained area by pressing with a clean white absorbent paper towel. Observe the transfer of both cleaning agent and stain residue to the paper towel. Continue blotting with clean dry paper towels until all evidence of liquid transfer is gone.
- 7.13 Re-apply cleaning solution to stain and blot with clean dry paper towels until stain is completely removed or there is no evidence of stain transfer to the clean paper towel.
- 7.14 Place test material on a non-absorbent surface and allow 24 ( $\pm$  2) hours for conditioning before evaluating stains.
- 7.15 When cleaning the test carpets with water, use the steps outlined 7.10-7.14.

**Table 1 - Spot Remover Agents**

Staining Agents	Application	Dilution Ratio
Mustard	2.5 (± 0.5) mL	1:2 (Mustard:H <sub>2</sub> O)
Catsup	2.5 (± 0.5) mL	1:3 (Catsup:H <sub>2</sub> O)
Hot Coffee 60° ± 3° C	2.5 (±0.5) mL	Full Concentration
Purple Grape Juice	2.5 (± 0.5) mL	Full Concentration
Black Permanent Ink (Chisel Point)	Draw 2 (Two) 1" lines across ring	N/A
Dirty Motor Oil	2.5 (± 0.5) mL	1:1 (Oil:Tetradecane)
AATCC Synthetic Soil *	2.5 (± 0.5) mL	0.5 grams/100 ml
Chocolate Syrup	2.5 (± 0.5) mL	1:4 (chocolate:H <sub>2</sub> O)

\* Soil requires sifting through 100 mesh screen prior to mixing with water.

**Table 2 - Pet Stain and Odor Agents**

Staining Agents	Application	Dilution Ratio
Cat Urine	2.5 ± 0.5 ml	Full Concentration AuSable Bobcat Urine ( <a href="http://www.pcsoutdoors.com">www.pcsoutdoors.com</a> )
Synthetic Pet Vomit	2.5 ± 0.5 ml	Formula = 4 oz. Prime Cut Beef Wet Dog Food + 4 oz. water + HCL (add to achieve pH 3.2-3.5)
Dog Feces	2.5 ± 0.5 ml	1:1 Water
AATCC Synthetic Soil *	2.5 ± 0.5 ml	0.5 grams/100 ml

\* Soil requires sifting through 100 mesh screen prior to mixing with water.

## 8. Evaluation

- 8.1 Grade each stain in accordance with AATCC Evaluation Procedure 2 using the Gray Scale for Staining for each of the test carpet compared to the unstained carpet.
- 8.2 Individual grades for each stain application of each stain agent are determined for the cleaning solution test sample.
- 8.3 Individual grades for each stain application of each stain agent are determined for the water-only test sample.
- 8.4 Steps 8.1 through 8.3 are completed by three different trained technicians.

## 9. Assessment

- 9.1 Grades for each stain agent are averaged for the cleaning solution test sample.
- 9.2 Grades for each stain agent are averaged for the water only test sample.
- 9.3 A grand average of all stain agents included in the test is calculated for the cleaning solution test sample.
- 9.4 A grand average of all stain agents included in the test is calculated for the water only test sample.
- 9.5 The final result for cleaning effectiveness is the grand average of the cleaning solution grade minus the grand average of the water only grade.

## 10. Report

- 10.1 The identifying information for the cleaning solution (manufacturer name, product name, and solution type).
- 10.2 Record date carpet was stained and cleaned and report date.
- 10.3 The average grade for each staining agent cleaned with water only.
- 10.4 The average grade for each staining agent cleaned with solution.
- 10.5 The grand average grade of all stain agents and test samples cleaned with solution.
- 10.6 The grand average grade of all stain agents and test samples cleaned with water only.
- 10.7 The final result for cleaning effectiveness is the average of the solution grade minus the average of the water only grade.
- 10.8 Any deviations from this test method.