
ACT Coated Fabric Testing Guide for Healthcare Upholstered Seating

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PART 1:

ACT Voluntary Performance Guidelines for Coated Fabrics – Test Descriptions

SECTION 1.1

Flammability



The measurement of a coated fabric's performance when it is exposed to specific sources of ignition.

1.1.1

Test: California TB 117-2013 Section 1 – Pass

Test Description:

California Technical Bulletin 117-2013 Section 1 is a test method of the California Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation. The test uses small cushions, which are miniatures of a seat and back, to measure the smolder resistance of the materials used in upholstered furniture. A lighted cigarette is placed in the crevice formed by the vertical back and horizontal seat cushions. Smoldering cannot exceed 45 minutes; vertical char cannot exceed 1.8 inches (45 mm); and the mock-up specimen cannot transition into open flame. ACT Guideline: Pass.

For complete technical details about Cal TB 117 2013: http://www.bearhfti.ca.gov/about_us/tb117_2013.pdf

For a helpful FAQ document written by the State of California: http://www.bearhfti.ca.gov/about_us/tb117_faqs.pdf

SECTION 1.2

Wet & Dry Crocking



Transfer of color from the surface of a solid or printed coated fabric onto another surface by rubbing.

1.2.1

Test: AATCC 8, Dry Crocking, Grade 4 minimum, Wet Crocking, Grade 4 minimum

Test Description:

AATCC 8 is a test method of the American Association of Textile Chemists and Colorists. To test for dry crocking, a dry white cotton fabric is rubbed against the surface of the fabric being evaluated. To test for wet crocking, the white cotton fabric is wet before rubbing against the fabric being evaluated. After rubbing under controlled pressure for a specific number of times, the amount of color transferred to the white cotton fabric is compared to the AATCC color chart. A rating from Grade 5 (no color transfer) to Grade 1 (high degree of color transfer) is determined. ACT Guideline: Grade 4 minimum for both Wet & Dry Crocking.

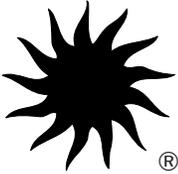
For complete technical details about AATCC 8: <http://www.aatcc.org>



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SECTION 1.3

Colorfastness to Light



Accelerated light aging evaluates a coated fabric's ability to resist fading, gloss change and surface deterioration.

1.3.1

Test: AATCC 16.2 Option 1 or 16.3 Option 3, Grade 4 minimum at 200 hours*

Or

1.3.2

Test: ASTM D4329 No appreciable color change at 150 hours*

Test Descriptions:

AATCC 16 is a test method of the American Association of Textile Chemists and Colorists. For this test, a strip of fabric (part of which is masked by a special paper card) is placed in a fadeometer or weatherometer and exposed to the selected light source (Carbon-Arc or Xenon-Arc) for the required number of hours. After exposure, the difference in color between the exposed and masked parts of the fabric are compared to the AATCC gray scale for color change. A rating from Grade 5 (no fading) to Grade 1 (high degree of fading) is determined. ACT Guideline: Grade 4 minimum.

For complete technical details about AATCC 16: <http://www.aatcc.org>

ASTM D4329 is a test method of the American Society of Testing and Materials. This test uses a fluorescent ultraviolet lamp apparatus. To simulate indoor conditions, the specimen is exposed to 150 continuous hours of UV light. ACT Guideline: No appreciable color change at 150 hours.

For complete technical details about ASTM D4329: <http://www.astm.org>

*Note: There is no direct correlation between the numbers of testing hours and hours of service in the field.

SECTION 1.4

Physical Properties



Key factors in assessing overall durability of a coated fabric vary depending on the coated fabric's composition and construction.

1.4.1 Adhesion of Coating

Peel adhesion is the measurement of the force required to separate the coating from the substrate.

1.4.1.1

Test: ASTM D751, 3 lbf/in minimum

Test Description:

ASTM D751 is a test method of the American Society of Testing and Materials. To test adhesion of coating to the fabric substrate, the coating is separated from the fabric at one end of a specimen. The coating and fabric are each clamped and then pulled in an attempt to further separate them. The number of pounds of force required to separate the coating from the fabric is measured and reported in pounds of force per linear inch. ACT Guideline: 3 lbf/in minimum.

For complete technical details about ASTM D751: <http://www.astm.org>

1.4.2 Tear Strength

Tear strength is the measurement of stress exerted to rip the fabric under tension.

1.4.2.1

Test: ASTM D2261 (Tongue Tear) – Knits & Woven Substrates, 4 x 4 lbs.

Or

1.4.2.2

Test: ASTM D751 (Tongue Tear) – Knits & Woven Substrates, 4 x 4 lbs.

1.4.2.3

Test: ASTM D5733 (Trap Tear) – Nonwoven Substrates & Nonwoven Composites, 15 x 15 lbs.

Or

1.4.2.4

Test: ASTM D751 (Trap Tear) – Nonwoven Substrates & Nonwoven Composites, 15 x 15 lbs.

Test Descriptions:

ASTM D2261 is a test method of the American Society of Testing and Materials. This test measures the force required to tear coated fabrics that have knit or woven substrates. A fabric rectangle is cut to form a two-tongued (trouser shaped) specimen. Each tongue is clamped in a tensile testing machine and pulled in the opposite direction in an attempt to tear the fabric. The number of pounds required to cause a tear determines the rating. ACT Guideline: 4 lbs. machine direction and 4 lbs. cross direction minimum.

For complete technical details about ASTM D2261: <http://www.astm.org>

ASTM D751 is a test method of the American Society of Testing and Materials. This test measures the force required to tear coated fabrics that have knit or woven substrates. A fabric rectangle is cut to form a two-tongued (trouser shaped) specimen. Each tongue is clamped in a tensile testing machine and pulled in the opposite direction in an attempt to tear the fabric. The number of pounds required to cause a tear determines the rating. ACT Guideline: 4 lbs. machine direction and 4 lbs. cross direction minimum.

For complete technical details about ASTM D751: <http://www.astm.org>

ASTM D5733 is a test method of the American Society of Testing and Materials. This test is used on two types of fabrics—coated fabrics that have nonwoven substrates and nonwoven composite fabrics—and measures the force required to tear the fabric. A specimen in the shape of an isosceles trapezoid with a small cut at the center of the smallest base of the trapezoid is prepared. The nonparallel sides of the trapezoid are clamped in parallel jaws of a tensile testing machine and pulled in an attempt to tear the fabric. The number of pounds required to cause a tear determines the rating. ACT Guideline: 15 lbs. machine direction and 15 lbs. cross direction minimum.

For complete technical details about ASTM D5733: <http://www.astm.org>

ASTM D751 is a test method of the American Society of Testing and Materials. This test is used on two types of fabrics—coated fabrics that have nonwoven substrates and nonwoven composite fabrics—and measures the force required to tear the fabric. A specimen in the shape of an isosceles trapezoid with a small cut at the center of the smallest base of the trapezoid is prepared. The nonparallel sides of the trapezoid are clamped in parallel jaws of a tensile testing machine and pulled in an attempt to tear the fabric. The number of pounds required to cause a tear determines the rating. ACT Guideline: 15 lbs. machine direction and 15 lbs. cross direction minimum.

For complete technical details about ASTM D751: <http://www.astm.org>

1.4.3 Breaking Strength

Breaking strength is the measurement of force exerted to pull a fabric apart under tension.

1.4.3.1

Test: ASTM D751 (Grab Test) – 50 x 50 lbs. minimum.

Test Description:

ASTM D751 contains standard test methods for Coated Fabrics by the American Society of Testing and Materials (ASTM). The Grab Test sections describe this test. The fabric being tested is put into a machine with two clamps that grip the fabric on opposite sides. One clamp is stationary and the other moves away, applying tension until the fabric breaks or ruptures. This test is performed in both the machine and cross direction. The number of pounds required to cause a fabric to break or rupture determines the rating. ACT Guideline: 50 lbs. machine direction and 50 lbs. cross direction minimum.

* For complete technical details about ASTM D751 (Grab Test): <http://www.astm.org>

1.4.4 Seam Strength

Seam strength is the measurement of a fabric's resistance to tearing at needle punctures in a seam.

1.4.4.1

Test: ASTM D751 (Tack Tear) – Woven Substrates, 25 x 25 lbs.,
Knit Substrates, 30 x 25 lbs.,
Nonwoven Substrates & Nonwoven Composites, 35 x 35 lbs.

Test Description:

ASTM D751 contains standard test methods for Coated Fabrics by the American Society of Testing and Materials (ASTM). The Tack Tear sections describe this test. The fabric being tested is put into a machine with two clamps that grip the fabric on opposite sides. The lower clamp is stationary; the upper clamp, with specified needles piercing the fabric, moves away in an attempt to tear the fabric at the needles. This test is performed in both the machine and cross direction. The number of lbs. force required to cause tearing determines the rating. ACT Guideline: 25, 30, 35 lbs. machine direction (woven, knit, nonwoven) and 25, 25, 35 lbs. cross direction (woven, knit, nonwoven) minimum.

* For complete technical details about ASTM D751 (Tack Tear): <http://www.astm.org>

1.4.5 Flex Resistance

Flex resistance is the measurement of a fabric's ability to withstand repeated flexing.

1.4.5.1

Test: ASTM D2097 – 25,000 cycles, Visual evaluation for no appreciable surface crazing, cracking, whitening or delamination.

Test Description:

ASTM D2097 is a test of the American Society of Testing and Material (ASTM). The fabric being tested is put into a machine with two clamps that grip the fabric on opposite sides. The moving clamp flexes a crease in the fabric on each cycle to evaluate its tendency to crack. The machine runs at 500 cycles a minute for the specified period of time after which the specimens are examined visually. This test is performed in both the machine and cross direction. Visual evidence of crazing, cracking, whitening, or separation of coating from the fabric backing is unacceptable. ACT Guideline: 25,000 cycles machine direction and 25,000 cycles cross direction minimum.

* For complete technical details about ASTM D2097: <http://www.astm.org>

1.4.6 Hydrolysis Resistance (Applicable to Polyurethanes Only)

Hydrolysis resistance is the evaluation of a polyurethane coated fabric's ability to withstand exposure to extended periods of heat and humidity.

1.4.6.1

Test: ISO 1419 (Tropical Test Method C), 5 weeks. Visual Evaluation for no cracking, peeling or delamination.

Test Description:

ISO 1419 (Tropical Test Method C) is a test method of the International Organization for Standardization. Fabric specimens are placed in an oven that is heated to 70° C (158° F). The oven must also have at least 95% relative humidity and expose the specimens to free passage of air on both sides. Test pieces are removed from the oven weekly and visually evaluated for cracking, peeling or delamination. The rating is determined by the number of weeks the fabric passes this evaluation. Note that there is no direct correlation of testing weeks to years of service in the field. ACT Guideline: 5 weeks minimum.

For complete technical details about ISO 1419: <http://www.iso.org>

1.4.7 Stretch & Set

ACT has chosen not to establish a minimum requirement for this performance characteristic since the ability of a coated fabric to return to its initial state is strongly impacted by factors that are attributed to furniture construction and fabrication such as the density of foam. The SAE J855 test is a test method of SAE International that can be used to evaluate the stretch and set of a coated fabric; however, ACT considers it more important to consult with both your fabric supplier and furniture manufacturer to identify any potential issues. ACT Guideline: N/A



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SECTION 1.5

Abrasion



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The surface wear of a coated fabric caused by friction.

1.5.1

Test: ASTM D4157, 50,000 double rubs Wyzenbeek method*

Test Description:

ASTM D4157 is a test method of the American Society of Testing and Materials. This test uses a Wyzenbeek machine as outlined in the test method. Specimens are cut from the machine direction and cross direction of the fabric and mounted on the machine, as is an abradant: ACT approved #10 cotton duck fabric or wire screen. The number of double rub cycles achieved before “noticeable wear” is observed and recorded as the fabric’s abrasion rating. ACT Guideline: 50,000 double rubs.

For complete technical details about ASTM D4157: <http://www.astm.org>

**Disclaimer: Wyzenbeek test results are not necessarily a reliable indicator of fabric lifespan. Comparative laboratory testing results on the same textiles frequently differ and testing methods do not necessarily correlate well with the variables encountered in actual use by the end-user. Licensees using the ACT performance certification marks and publishing test results are required, at a minimum, to provide in their sampling, marketing materials and Website, the following statement:*

Abrasion test results exceeding ACT Performance Guidelines are not an indicator of product lifespan. Multiple factors affect fabric durability and appearance retention.

1.5.2

Test: ASTM D3389 (Applicable to Printed Coated Upholstery Fabrics Only), Rating of 3 or higher

Test Description:

ASTM D3389 is a test method of the American Society of Testing and Materials. This Taber test has been modified by ACT to evaluate print loss on a coated fabric. A specimen is abraded using rotary action under controlled conditions. The test specimen, mounted on a turntable platform, turns against two abrading wheels for 250 revolutions. The resulting circular abrasion marks are compared to the ACT Coated Fabric Print Retention Photographic Scale to evaluate print loss. A rating from Grade 5 (no print loss) to Grade 1 (extreme print loss) is determined. ACT Guideline: Grade 3 or higher.

For complete technical details about ASTM D3389: <http://www.astm.org>

PART 2:

Tests for Evaluating a Fabric's Ability to Withstand Cleaning, Sanitizing and Disinfecting

SECTION 2.1

Liquid Chemical Cleaners, Sanitizers & Disinfectants

2.1.1

ACT TM 1-2020: Assessing Resistance to Liquid Cleaners, Sanitizers and Disinfectants (Part 2: Coated Fabrics)

Test Description:

This is a test method of the Association for Contract Textiles. The test is an accelerated exposure method to evaluate the impact of cleaners, sanitizers and disinfectants on coated fabrics. It was designed to be conducted without specialized laboratory equipment so that fabric suppliers, furniture manufacturers and end-users have the option to perform their own testing. Cleaning, sanitizing or disinfecting product at the proper dilution is placed on a sample of coated fabric and allowed to dry. The procedure is repeated multiple times before the chemical residue is wiped off using water. After each application, the test specimen is visually evaluated. ACT Guideline: Discoloration or change of gloss is unacceptable beyond slight effect. Cracking, peeling or bubbling of the topcoat is unacceptable.

Reminder: Testing does not represent a "real world" scenario; there is no way to control the use (or misuse) of cleaners, sanitizers and disinfectants when applied in an actual field setting.

For complete technical details about ACT TM 1-2020 <http://www.contracttextiles.org>

SECTION 2.2

Ultraviolet C Radiation (UVC)

2.2.1

Accelerated UVC Testing of Contract Textiles

Test Description:

This is a test method of Vartest Laboratories Inc. This test is an accelerated exposure method to evaluate the impact of UVC radiation on contract textiles. Samples are placed in a specially designed fadeometer and exposed to short wave length UVC light. After a designated exposure period the coated fabric is assessed for shade change, embrittlement, and topcoat degradation including changes in gloss, surface chemistry and physical structure.

For complete technical details about Accelerated UVC Testing of Contract Textiles <http://www.vartest.com/3626/vartest-has-a-faq-on-uv-c-uv-g-and-textiles/>

PART 3:

Tests for Evaluating Cleaning and Stain Removal Effectiveness

SECTION 3.1

Stain Resistance & Removal

3.1.1

Test: GMW15377 Staining and Cleaning of Leather and Plastic Roll Goods (Denim Dye Transfer*)

Test Description:

GMW15377 is a test method of General Motors Corporation. This test uses a Martindale tester to rub black denim onto a coated fabric. After the coated fabric has been removed from the tester, it is cleaned in an attempt to remove the transferred color and the results are visually evaluated. *ACT suggests this test to evaluate denim dye transfer on light-color coated fabrics.

3.1.2

Test: ASTM D1308 Effect of Household Chemicals on Clear and Pigmented Organic Finishes

Test Description:

ASTM D1308 is a test method of the American Society of Testing and Materials. This test is often modified for coated fabrics and can be performed as either a covered spot test or an open spot test. The staining agent is placed on the material. After a specified time, the spot is wiped clean and the fabric is examined for return to its original condition. These steps can be repeated. A battery of different staining agents can be used, such as food, ink, cosmetics, blood, urine and cleaning products. Determining which type of stain to test depends on the customer and can be modified to the product's end-use (e.g., cafeteria, patient room, waiting area). ACT suggests this test to evaluate potential surface alteration of a coated fabric after exposure to staining and cleaning agents.

3.1.3

Test: Stain Release and Cleaning

Test Description:

This test method is customized using three variables: the staining agent; the amount of time the product is exposed to the staining agent; and the cleaning product selected to remove the staining agent. The selected staining agent is applied to two pieces of coated fabric. The stains are allowed to set for a specific period of time – shorter for the first piece, and longer for the second piece. After each time period has elapsed, the selected cleaning product is used according to the product directions in an attempt to remove the stain. After the test specimens have dried, they are evaluated by comparing the cleaned specimens to the original standard. ACT suggests this test to determine if a stain can be removed without objectionable surface alteration of the coated fabric.

PART 4:

Testing Coated Fabrics in the Field

SECTION 4.1

ACT Field Test

Lab testing and field testing may both be helpful tools when selecting coated fabrics for healthcare upholstered seating. Field testing may account for environmental conditions and external factors that are specific to a facility and location.

Field testing is a way for fabric suppliers to work proactively in partnership with furniture manufacturers and a healthcare facility to identify best possible solutions and outcomes related to upholstered seating.

Recommended Steps

4.1.1

Determine the test location and duration of test to monitor how well the fabric performs under actual usage conditions. The longer duration of the test, the better.

4.1.2

Select upholstery fabrics that suppliers have evaluated using ACT TM 1-2020: Assessing Resistance to Liquid Cleaners, Sanitizers and Disinfectants (Part 2: Coated Fabrics) and tested with cleaners, sanitizers and disinfectants specific to the facility.

4.1.3

Upholster the furniture that will be used in the facility.

4.1.4

Install the upholstered furniture where it will be tested for its endurance to real-life use, traffic, environmental conditions and the facility's cleaning, sanitizing and disinfecting protocols. This may include other protocols such as UVC radiation and hydrogen peroxide vapor/mist systems.

4.1.5

Encourage the environmental services and nursing teams to comply with their facility's cleaning, sanitizing and disinfecting protocols and to assist in documenting performance and feedback from patients and staff.

4.1.6

Inspect furniture and fabric condition at set times, such as 30-day intervals. Assessments can be done by internal personnel, and if possible, may include fabric/furniture suppliers.

4.1.7

Record your observations of the furniture and the fabric at each assessment interval. Look for:

- a. General soiling
- b. Wear and/or damage (e.g., blisters, cracks, delamination, discoloration)
- c. Abuse (e.g., scratches, punctures)
- d. Staining (e.g., hair- and skin-care moisturizing products, cosmetics, suntan lotion, hand sanitizers, nail polish, fragrances, food and beverages, body oil and fluids, chemicals used in medical treatments)
- e. Cleaning and disinfecting chemical residue build-up
- f. Other changes in condition

4.1.8

To determine final fabric selections for the intended application/installation, review field test observations with fabric and furniture suppliers along with the facility's management, environmental services, nursing and infection control teams. Field test product performance observations can help inform replacement and refurbishment furniture cycles, schedules and budgets.



DISCLAIMER:

ACT's Coated Fabric Testing Guide for Healthcare Upholstered Seating ("Testing Guide") has been prepared by the Association for Contract Textiles, Inc. ("ACT") to provide manufacturers, specifiers and end users with various tests to help assess commercial textile products.

The Testing Guide is for informational purposes only. While the Testing Guide is provided in good faith as a service to the contract textiles industry, the Testing Guide is provided "AS-IS". ACT does not guarantee or make any representation whatsoever regarding (i) the Testing Guide; (ii) any document or symbol cited in the Testing Guide (including, without limitation, the ACT Voluntary Performance Guidelines ("Guidelines") and its associated symbols ("Mark" or "Marks")); or (iii) the performance or safety of any test, product, sample or service referenced in the Testing Guide or the Guidelines. In addition, ACT does not guarantee or make any representation that any test, product, service or sample that bears or to which a Mark is referenced will, in fact comply with applicable federal, state or municipal laws, codes, rules and regulations concerning the intended use of such products ("Laws").

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It is the responsibility of the contract textile manufacturer, specifier and end-user (not ACT) to determine in all instances whether or not a textile meets each of the Standards to which a particular Mark is referenced. And, whenever appropriate, specifiers and end users should seek the advice of professionals or other knowledgeable persons to ascertain whether a product will in fact comply with applicable Laws.

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