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## Physical Properties ACT Voluntary Performance Guidelines Test Method Descriptions

ACT Voluntary Performance Guidelines make fabric specification easier. The Guidelines address Flammability and four aspects of fabric durability—Wet & Dry Crocking, Colorfastness to Light, Physical Properties, and Abrasion. This document focuses on Physical Properties.

To give architects, designers, and end-users a vast amount of performance information in a succinct visual way, ACT developed icons to indicate that a fabric meets or exceeds guideline requirements. Look for these Registered Certification Marks on ACT Member Company sampling to assure that the fabrics you specify perform up to contract standards and pass all applicable testing.

All ACT Voluntary Performance Guidelines cover woven and coated fabrics for indoor use. “Woven Fabrics” consist of two sets of yarns, warp and filling, formed by weaving, which is the process of interlacing these sets of yarns. “Coated Fabrics” typically include a fabric or similar substrate with one or more layers of a film-forming polymer such as vinyl or polyurethane on the wear surface of the fabric.

Test methods used in the Guidelines measure fabric performance under standard laboratory conditions. All Physical Properties test methods presented here are intended to represent the most current version. Note: Individual ACT Member product information may represent a different version of a test method depending on the date the product was introduced to market.

**Important:** These tests represent minimum requirements, which are subject to change without notice and may not reflect requirements or laws in all locations. See information and disclaimer on page 4.

### Physical Properties



Key factors in assessing overall durability of a fabric vary depending on the fabric construction.

#### ACT GUIDELINES

##### Upholstery – Woven Fabrics

###### Pilling

ASTM D3511 (Brush Pill), Class 3 minimum

Or

ASTM D4970, (Martindale Tester), Class 3 minimum

*Pilling* is the formation of fuzzy balls of fiber on the surface of a fabric that remain attached to the fabric.

###### Breaking Strength

ASTM D5034 (Grab Test), 50 lbs. minimum in warp and weft

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

###### Seam Slippage

ASTM D4034, 25 lbs. minimum in warp and weft

*Seam Slippage* is the movement of yarns in a fabric that occurs when it is pulled apart at a seam.

##### Upholstery – Coated Fabrics

###### Adhesion of Coating

ASTM D751 Sections 45-48, 3 lbf/in minimum

*Adhesion of coating* is the measurement of the force required to separate the coatings from the substrate.

###### Tear Strength

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

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

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

###### Hydrolysis Resistance – Applicable to Polyurethanes Only

ISO 1419 (Tropical Test Method C), 5 weeks

Visual Evaluation for no cracking, peeling or delamination

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

*Note: There is no direct correlation of testing weeks to years of service in the field.*

#### Stretch & Set

*ACT has chosen not to establish a minimum requirement for this performance characteristic since the ability of a 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 can be used to evaluate the stretch and set of a coated fabric; however, ACT suggests that you consult with both your fabric supplier and furniture manufacturer to determine if there are any potential issues.*

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#### **Wrapped Panels and Upholstered Walls**

##### Breaking Strength

ASTM D5034 (Grab Test), 35 lbs. minimum in warp and weft

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#### **Drapery**

##### Seam Slippage

ASTM D434 for fabrics over 6 oz./sq. yard, 25 lbs. minimum in warp and weft

#### **TEST METHODS**

##### **ASTM D3511\***

The ASTM D3511 is a test method of the American Society of Testing and Materials (ASTM). This test utilizes nylon bristles to rub the surface of the test fabric for a specific amount of time. The number of pill balls are counted and given a 1 – 5 rating.

Class 5 = no pilling

Class 1 = severe pilling

\* For complete technical details about ASTM D3511: <http://www.astm.org>

##### **ASTM D5034 (Grab Test)\***

The ASTM D5034 (Grab Test) is a test method of the American Society of Testing and Materials (ASTM). To evaluate, the fabric being tested is put into a machine that grips the fabric with two clamps. One clamp is stationary and the other moves away applying tension until the fabric breaks or ruptures. This test is performed in both the warp and weft directions. The number of pounds required to cause a fabric to break or rupture determines the rating.

\* For complete technical details about ASTM D5034 (Grab Test): <http://www.astm.org>

##### **ASTM D4034\***

The ASTM D4034 is a test method of the American Society of Testing and Materials (ASTM). To measure a fabric's ability to resist seam slippage, a seam is constructed to the following specifications:

Seam Allowance: 0.5 inches

Seam Type: 301 Lockstitch

Thread Type: 100% Nylon Bonded Monocord

Needle Thread Size: 8

Bobbin Thread Size: 5

Needle: Size 22 Ball Point

Stitches per Inch: 7 ± 0.5

The sewn fabric is then clamped at opposing side of the seam. One clamp is moved away from the other applying tension at the sewn seam. This test is performed in both the warp and filling directions. The tension is increased until the seam separates to a specific distance. The number of pounds required to cause separation due to yarn slippage determines the rating.

\* For complete technical details about ASTM D4034: <http://www.astm.org>

**ASTM D4970\***

Brief description to be added.

\* For complete technical details about ASTM D4970: <http://www.astm.org>

**ASTM D751\***

Brief description to be added.

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

**ASTM D2261\***

Brief description to be added.

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

**ASTM D5733\***

Brief description to be added.

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

**ISO 1419**

Brief description to be added.

**ASTM D434\***

The ASTM D434 is a test method of the American Society of Testing and Materials (ASTM). To measure a fabric's ability to resist seam slippage, a seam is constructed to the following specifications:

Seam Allowance: 0.5 inches

Seam Type: 301 Lockstitch

Thread Type: No. 24 – 4 "Z" Twist White Cotton

Needle: Chrome-Plated 0.063 inch diameter

Stitches per Inch: 7 to 8

The sewn fabric is then clamped at opposing side of the seam. One clamp is moved away from the other applying tension at the sewn seam. This test is performed in both the warp and filling directions. The tension is increased until the seam separates to a specific distance. The number of pounds required to cause separation due to yarn slippage determines the rating.

\* For complete technical details about ASTM D434: <http://www.astm.org>



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Neither the Guidelines, nor the Marks constitute any promise, representation or warranty that a product 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 product ("Laws"), nor any assurance, representation or guarantee regarding or relating in any manner to the safety of any product or sample that bears or, to which a Mark is referenced.

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.

Understand that the testing and standards ("Standards") referenced in the Guidelines are developed and promulgated by third parties not associated with ACT, and that these Standards often change or are supplemented by such third parties. Accordingly, the fact that a particular Standard is referenced in the Guidelines (and/or associated with any Mark) does not mean, nor is it intended to be a representation that Standard is the most current one.

It is the responsibility of the contract textile vendor and/or the manufacturer (not ACT) to determine in all instances whether or not a textile meets each of the Standards to which a particular Mark is referenced.

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