association for contract textiles

Abrasion
ACT Voluntary Performance Guidelines
Test Method Descriptions for Woven Fabrics – Outdoor

ACT Voluntary Performance Guidelines for Flammability and four aspects of fabric durability—Wet & Dry Crocking, Colorfastness to Light, Physical Properties, and Abrasion—make fabric specification easier.

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.

ACT Guidelines are based on a fabric's construction (woven, coated, knit), its intended application (upholstery, direct glue wallcovering/adhered panels, wrapped panels/upholstered walls, drapery), and where it will be used (indoor, outdoor). The application and usage parameters are set by the fabric supplier. All three parameters determine which set of ACT Voluntary Performance Guidelines applies.

This specific set of guidelines applies to woven fabrics for outdoor use as upholstery. "Woven Fabrics" are formed by interlacing two or more perpendicular groups of yarns.

Test methods included in the Guidelines measure fabric performance under standard laboratory conditions and are intended to represent the most current test 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.

Abrasion — WOVEN FABRICS, OUTDOOR USE

Low Traffic / Private Spaces – Upholstery

High Traffic / Public Spaces – Upholstery

The surface wear of a fabric caused by friction.

ACT GUIDELINES

Low Traffic / Private Spaces – Upholstery
ASTM D4157 (ACT approved #10 Cotton Duck)
15,000 double rubs Wyzenbeek method

ASTM D4966 (12 KPa pressure)
20,000 cycles Martindale method

High Traffic / Public Spaces – Upholstery
ASTM D4157 (ACT approved #10 Cotton Duck)
30,000 double rubs Wyzenbeek method

ASTM D4966 (12 KPa pressure)
40,000 cycles Martindale method

Disclaimer:
Abrasion 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 exceeding the ACT high-traffic abrasion guideline are required to provide the following statement on their samples, digital media, marketing materials, social media posts, direct and third-party websites:

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

Notes:
ACT studies indicate that results of multiple abrasion tests performed on some fabric structures may vary significantly – as much as 60 percent or more. There is no correlation between Wyzenbeek and Martindale results. For more information please refer to abrasion white papers on the ACT website:
http://www.contracttextiles.org/index.php?page=research

End use examples of heavy-duty installations where upholstery fabrics rated at 30,000 double rubs should be appropriate are single shift corporate, hotel rooms/suites, conference rooms and dining area usage.

ACT acknowledges that there are constant traffic/demanding spaces that may require higher levels of abrasion resistance. End use examples that may require higher than 30,000 double rubs include: 24-hour transportation terminals, 24-hour telemarketing, 24-hour healthcare emergency rooms, 24-hour casino gambling areas, and such public gathering places as theatres, stadiums, lecture halls and fast food restaurants.

It is strongly suggested that double rubs exceeding 100,000 are not meaningful in providing additional value in use. Higher abrasion resistance does not necessarily indicate a significant extension of the service life of the fabric.

The Wyzenbeek and Martindale tests are the two methods commonly used to predict wear-ability. Actual performance is determined by many factors such as fiber content, weaves, finishes, furniture design, maintenance, cleaning, and usage. Durability of an upholstery fabric is a complex interaction (combination) of performance tests that, in addition to abrasion, include seam slippage, pilling, tensile strength, and usage.

There is no correlation between the Wyzenbeek and Martindale tests so it is not possible to estimate the number of cycles that would be achieved on one test if the results from the other test were known.

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TEST METHODS

ASTM D4157* Oscillatory Cylinder (Wyzenbeek)

The ASTM D4157 is a test of the American Society of Testing and Materials. A Wyzenbeek machine is used for this test allowing samples of the test fabric to be pulled tight in a frame and held stationary with 3 pounds force of pressure and 4 pounds force of tension. Individual test specimens cut from the warp and weft direction are then rubbed back and forth using an ACT approved #10 cotton duck fabric** as the abradant. For woven fabrics, the number of double rub cycles achieved before two yarn breaks occur, or "noticeable wear" is observed, is recorded as the fabric's abrasion rating.

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

*** Note: Wire screen abradant may be used for testing woven fabrics with low-melting fibers such as olefin.*

ASTM D4966* Martindale

The ASTM D4966 is a test method of the American Society of Testing and Materials (ASTM). This is an oscillating test. Fabric samples are mounted flat and rubbed in an elliptical motion using a piece of worsted wool cloth as the abradant and with 12 kPa of pressure. The number of cycles (movements) that the fabric can endure before fabric shows objectionable change in appearance (yarn breaks, pilling, holes) is counted. Number of cycles determines (movements) abrasion rating.

* For complete technical details about ASTM D4966: 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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