Designation: D 5432 – 93 (Reapproved 2000)ε1

Standard Performance Specification for Blanket Products for Institutional and Household Use[1]

This standard is issued under the fixed designation D 5432; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

ε[1] NOTE—Editorial corrections were made throughout in February 2001.

1. Scope

1.1 This specification covers the evaluation of specific performance characteristics of importance in thermal woven, conventional woven, flocked, nonwoven, and knitted blanket products for use in institutional and household environments.

1.2 This specification may be used by mutual agreement between the purchaser and the supplier to establish purchasing specification requirements.

1.3 The requirements in Table 1 apply to the length and width directions for those properties where fabric direction is pertinent.

1.4 This specification does not include requirements for electric blankets. Electric blankets are specified under UL 964 requirements dictated by the Underwriter's Laboratories.

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

2. Referenced Documents

2.1 *ASTM Standards:*

D 123 Terminology Relating to Textiles[2]

D 629 Test Methods for Quantitative Analysis of Textiles[2]

D 1518 Test Method for Thermal Transmittance of Textile Materials[2]

D 2724 Test Methods for Bonded, Fused and Laminated Apparel Fabrics[2]

D 2905 Practice for Statements on Number of Specimens for Textiles[2]

D 3136 Terminology Relating to Care Labeling for Apparel, Textile, Home Furnishing, and Leather Products [2]

D 3786 Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics—Diaphragm

TABLE 1 Specification Requirements

Characteristic	Requirements		
	Knits/Flock	Woven/Nonwoven	Section
Breaking Force (CRT method)[A] each direction	. . .	89 N (20 lbf) min	7.1.1
Bursting force, (ball burst)[A]	345 kpa (50 psi) min		7.1.2
Dimensional change:			
After 5 launderings each direction			7.2.1
Wool (50 % or more)	6.0 max	6.0 max	
Cotton	5.0 max	5.0 max	
All others	3.5 max	3.5 max	
After 3 drycleanings each direction			7.2.3
All fabrics	3.5 max	3.5 max	
Colorfastness:[B]			
Laundering:			7.3.1
Shade Change	Class 4[C] min	Class 4[C] min	
Staining	Class 3[D] min	Class 3[D] min	
Drycleaning			7.3.2
Shade Change	Class 4[C] min	Class 4[C] min	
Burnt Gas Fumes 2 cycles			7.3.3
Shade Change	Class 4[C] min	Class 4[C] min	7.3.4
Crocking:			
Dry	Class 4[E] min	Class 4[E] min	
Wet	Class 3[E] min	Class 3[E] min	
Light (20 AATCC SFU, xenon-arc[A])	Step 4[C] min	Step 4[C] min	7.3.5
Flammability	Class I	Class I	7.4
Thermal Transmittance	Acceptable[F]	Acceptable[F]	7.5
Laundered Appearance	Acceptable[G]	Acceptable[G]	7.6.1

[A] There is more than one standard method that can be used to measure breaking force, bursting force, and lightfastness. These methods cannot be used interchangeably since there may be no overall correlation between them (see Notes 2-5, and 8).

[B] Class for color change and color transfer is based on a numerical scale of 5 for negligible or no color change or color transfer to 1 for severe color change or color transfer. The numerical rating in Table 1 or higher is acceptable.

[C] AATCC Gray Scale for Color Change.

[D] AATCC Gray Scale for Staining.

[E] AATCC Chromatic Transference Scale.

[F] 7.5 Information.

[G] As agreed upon between the purchaser and the supplier.

[1] This specification is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.63 on Home Furnishings.

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[2] *Annual Book of ASTM Standards,* Vol 07.01.

Bursting Strength Tester Method[3]
D 3787 Test Method for Bursting Strength of Knitted Goods: Constant Rate-to-Traverse (CRT), Ball Burst Test Strength Tester[3]
D 3882 Test Method for Bow and Skew in Woven and Knitted Fabrics[4]
D 3993 Performance Specification for Woven, Thermal, Flocked, Nonwoven, and Knitted Household Blanket Fabrics[4]
D 3938 Guide for Determining or Confirming Care Instructions for Apparel and Other Textile Products[4]
D 4151 Test Method for Flammability of Blankets[4]
D 5034 Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test)[4]
2.2 *AATCC Methods:*[5]
8 Colorfastness to Crocking
16A Colorfastness to Light: Carbon Arc Lamp Continuous Light
16E Colorfastness to Light: Water Cooled Xenon-Arc Lamp, Continuous Light
23 Colorfastness to Burnt Gas Fumes
61 Colorfastness to Washing, Domestic and Laundering Commercial, Accelerated
88B Appearance of Seams in Wash and Wear Items After Home Laundering
96 Dimensional Changes in Laundering of Woven and Knitted Fabrics Except Wool
97 Non-Cotton Content of Bleached Cotton Textiles
116 Colorfastness to Crocking: Rotary Vertical Crockmeter Method
132 Colorfastness to Drycleaning
135 Dimensional Changes in Automatic Home Laundering of Woven or Knit Fabrics
Evaluation Procedure 1 Gray Scale for Color Change
Evaluation Procedure 2 Gray Scale for Staining
Evaluation Procedure 3 AATCC Chromatic Transference Scale
2.3 *UL Standard*:[6]
UL 964 Electrically Heating Bedding

NOTE 1—Reference to test methods in this specification give only the pertinent part of the designation of ASTM, AATCC, or other test methods. The current edition of each test method shall prevail.

3. Terminology

3.1 *Definitions:*

3.1.1 *blanket, n—for bedding*, an unquilted fabric designed primarily to provide thermal insulation.

3.1.1.1 *Discussion*—Blankets can be made in a variety of structures to provide thermal insulation, as follows:

(1) conventional blanket, n-usually woven in a plain or twill that is napped on both sides.

(2) flocked blanket, n-made with a fisnet-type scrim sandwiched between two thin layers of foam with flock adhered to the outside of the foam.

(3) nonwoven blanket, n-made by bonding or interlocking of fibers, or both, accomplished by mechanical, chemical, thermal, solvent means, or any combination thereof.

(4) insulated thermal blanket, n-a textured or leno weave that creates cells or openings in the fabric so that air warmed by the body is trapped between the yarns. This blanket may be napped or unnapped.

3.2 For definitions of other textile terms used in this specification, refer to individual ASTM standards and AATCC Test Methods, Terminology D 123 and Terminology D 3136, or your dictionary.

4. Significance and Use

4.1 Upon mutual agreement between the purchaser and the supplier, woven products intended for this end use should meet all of the requirements listed in Table 1 of this specification.

4.2 It is recognized that for purposes of fashion or aesthetics the ultimate consumer of articles made from these fabrics may find acceptable products that do not conform to all of the requirements in Table 1. Therefore, one or more of the requirements listed in Table 1 may be modified by mutual agreement between the purchaser and the supplier.

4.2.1 In such cases, any references to the specification shall specify that: This product meets Specification D 3993 except for the following characteristic(s).

4.3 Where no prepurchase agreement has been reached between the purchaser and the supplier, and in case of controversy, the requirements listed in Table 1 are intended to be used as a guide only. As noted in 4.2, ultimate consumer demands dictate varying performance parameters for any particular style.

4.4 The significance and use of particular properties and test methods are discussed in the appropriate sections of the specified test methods.

5. Sampling

5.1 *Acceptance Testing Lot*—Unless there is prior agreement, consider as a lot for acceptance testing all material of a single item as a single shipment.

5.2 *Lot Samples and Laboratory Samples*—For acceptance testing, take lot samples and laboratory samples as directed in each of the applicable test methods.

5.3 *Specimens*—Take the number of specimens directed in each of the applicable test methods. Perform the tests on the product as it reaches the customer. Any "partially finished" or "post-finish" fabrics should be processed in accordance with the fabric manufacturer's instructions.

5.4 If the applicable test method does not specify the number of specimens, use the procedures in Practice D 2905 to determine the number of specimens per laboratory sample unit.

5.4.1 Use a reliable estimate of the variability of individual observations on similar materials in the user's laboratory,

5.4.2 A 95 % probability level, and

5.4.3 An allowable difference of 5 % of the average between the test results on laboratory sampling units and the average for the laboratory sampling unit. The average for a

[3] Discontinued: see *1997 Annual Book of ASTM Standards*, Vol 07.02.
[4] *Annual Book of ASTM Standards*, Vol 07.02.
[5] Available from American Association of Textile Chemists and Colorists (AATCC), P.O. Box 12215, Research Triangle Park, NC 27709.
[6] Available from Underwriter's Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL 60062-0296.

laboratory sampling unit is the average that would be obtained by applying the test method to all of the potential specimens from that laboratory sampling unit.

6. Specification Requirements

6.1 *Fabrics*—The properties of fabrics for institutional and household conventional woven, thermal woven, flocked, nonwoven, and knitted blankets shall conform to the specification requirements in Table 1.

6.2 *Product*—The properties to be evaluated and the acceptance criteria assigned to these areas shall be set by mutual agreement between the purchaser and the supplier.

7. Testing For Household and Institutional Use

7.1 *Test Methods: Fabric*—The physical and colorfastness properties of the fabric in the products shall be evaluated as directed as follows:

7.1.1 *Breaking Force (Woven and Nonwoven Fabrics Only)*—Determine the breaking force as directed in the grab test procedure of Test Method D 5034, using a constant-rate-of traverse (CRT) tensile testing machine with the speed of the pulling jaw at 12 (300 ± 10 mm/min (12 ± 0.5 in./min).

NOTE 2—If preferred, a constant-rate-of-extension (CRE) tensile testing machine may be used. The crosshead speed should be as agreed upon between the purchaser and the supplier. There may be no overall correlation between the results obtained with the CRT machine and with the CRE machine. Consequently, these two breaking load testers cannot be used interchangeably. In case of controversy, the CRT method shall prevail.

7.1.2 *Bursting Force (Knit and Flocked Fabrics Only)*—Determine the bursting force of knit and flocked fabrics as directed in Test Method D 3787 using an approved type of constant-rate-of-traverse (CRT) machine equipped with a bursting attachment or as directed in Test Method D 3786 using an approved type of diaphragm bursting tester as agreed upon between the purchaser and the supplier.

NOTE 3—Care should be taken to subtract the tare diaphragm pressure from the gross pressure to obtain actual bursting strength of fabric when using the diaphragm bursting tester. Calibrate equipment in accordance with the manufacturer's instruction before using. Since there is no overall correlation between the results obtained with the CRT machine equipped with a bursting attachment and the diaphragm bursting tester, these two bursting testers cannot be used interchangeably. In case of controversy, the CRT machine equipped with a bursting attachment method shall prevail.

7.1.3 *Nonfibrous Material*—Determine the nonfibrous material as directed in AATCC Method 97.

NOTE 4—Determine only the water-soluble and enzyme-extractable material.

7.2 *Fabrication*:

7.2.1 *Dimensional Change*—Determine the maximum dimensional change after five launderings following permanently attached care label instructions, or as directed in AATCC Method 135 for household use, or AATCC Method 96 for institutional use, or ASTM Method D 2724 for drycleaning use as agreed upon between the purchaser and the supplier.

7.2.2 The wash conditions and drying procedure shall be as specified by the seller when using AATCC Method 135 for household products or AATCC Method 96 for institutional products.

7.2.3 The drycleaning procedure shall be as specified by the supplier when using ASTM D 2724 – 72 as directed in 10.1.1 to 10.1.4 with the exclusion of pressing.

NOTE 5—The method in 7.3.2 is a modification of the method used in 10.1.1 to 10.1.4 of Methods D 2724 – 72. The precision and accuracy have not been established. The method is not recommended for acceptance testing unless preceded by an interlaboratory check test in the laboratory of the purchaser and the laboratory of the supplier using randomized replicate specimens of the type of material to be evaluated.

7.3 *Colorfastness*:

7.3.1 *Laundering*—Determine the colorfastness to laundering as directed in Test 1-A of AATCC Method 61 unless otherwise agreed upon between the purchaser and the supplier. Use Multifiber Test Fabric No. 10[7] to determine the staining characteristics.

7.3.2 *Drycleaning*—Determine colorfastness to drycleaning as directed in AATCC Method 132.

7.3.3 *Burnt Gas Fumes*—Determine colorfastness to burnt gas fumes after two cycles on the original fabric as directed in AATCC Method 23.

7.3.4 *Crocking*—Determine colorfastness to dry and wet crocking as directed in AATCC Method 8 for solid shades and AATCC Method 116 for prints or as agreed upon between the purchaser and the supplier.

7.3.5 *Light*—Determine colorfastness to light as directed in AATCC Method 16A or AATCC Method 16E.

NOTE 6—There is a distinct difference in spectral distribution between the xenon fading lamp apparatus and the enclosed carbon-arc (not sunshine-carbon arc). Consequently, these two fading apparatus cannot be used interchangeably since there is no known overall correlation between them. In case of controversy, AATCC Method 16E shall prevail.

7.4 *Flammability*—Determine flammability as directed in Test Method D 4151 except when regulated by applicable Government mandatory standards.

7.5 *Thermal Transmittance*—Test Method D 1518 is an accepted method for determining thermal transmittance. However, due to wide variations in blanket fabric thickness, construction, inherent fiber thermal properties, and intended use by the ultimate consumer, minimum requirements for thermal transmittance cannot be established.

7.6 *Product*:

7.6.1 *Appearance*—Before and after laundering, determine the appearance of blanket fabric, hems, seams, binding, or such other appearance characteristics as are agreed upon between the purchaser and the supplier.

8. Report

8.1 State that the specimen(s) were tested as directed in Performance Specification D 5432. Describe the fiber content, the type of fabric, the type(s) of blanket product tested, and identify the components.

8.2 The report shall include the following additional information:

8.2.1 Objective of the test,

8.2.2 Description and identification of blanket product(s),

[7] Multifiber Test Fabric No. 10 is available from Test Fabrics, Inc., P.O. Box 420, Middlesex, NJ 08841.

8.2.3 Description of the method of sampling used,

8.2.4 List of performance characteristics evaluated, the test method used for each, and the results of each,

8.2.5 Number of laundering cycles and the wash conditions used, and

8.2.6 Conclusion, if appropriate.

9. Conformance

9.1 When the purchaser and the supplier have agreed upon specific requirements for the characteristics that are to be considered, blanket products that fail to meet these requirements may be rejected. Rejection should be reported to the supplier in writing. In case of disagreement with the results of the test, the supplier may make claim for a retest.