



Designation: D5665–99a Designation: D 5665 – 99a (Reapproved 2006)

Standard Specification for Thermoplastic Fabrics Used in Cold-Applied Roofing and Waterproofing¹

This standard is issued under the fixed designation D 5665; 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.

1. Scope

1.1 This specification covers thermoplastic fabrics such as polyester, polyester/polyamide bicomponent, or composites with fiberglass or polyester scrim that can be used during the construction of cold-applied roofing and waterproofing.

1.2 This specification is intended as a material specification. Issues regarding the suitability of specific roof constructions or application techniques are beyond the scope of this specification.

1.3 The specified tests and property values used to characterize the respective fabrics are intended to establish minimum properties. In-place system design criteria or performance attributes are factors beyond the scope of this material specification.

1.4 The values stated in SI units are to be regarded as the standard. The values given in parenthesis are for information only.

2. Referenced Documents

2.1 *ASTM Standards:*²

D 123 [Terminology Relating to Textiles](#)

D 1079 [Terminology Relating to Roofing, Waterproofing, and Bituminous Materials](#) Terminology Relating to Roofing and Waterproofing

D 1117 [Test Methods for Nonwoven Fabrics](#)² Guide for Evaluating Nonwoven Fabrics

D 1776 [Practice for Conditioning Textiles for Testing](#)² Practice for Conditioning and Testing Textiles

D 1777 [Test Method for Thickness of Textile Materials](#)

D 4830 [Test Methods for Characterizing Thermoplastic Fabrics Used in Roofing and Waterproofing](#)

D 5035 [Test Method for Breaking Strength and Elongation of Textile Fabrics \(Strip Method\)](#)

D 5733 [Test Method for Tearing Strength of Nonwoven Fabrics by the Trapezoid Procedure](#)

3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, refer to Terminologies D 123 and D 1079.

4. Classification

4.1 The thermoplastic fabrics covered by this specification are of the following general constructions and compositions. Each is a separate class or type differentiated by the polymer type, combination of polymers, manufacturing process, or some combination thereof.

4.1.1 *Type I*—Polyester spunbonded without resin, unneeded;

4.1.2 *Type II*—Polyester spunbonded without resin, needed;

4.1.3 *Type III*—Polyester mat plus fiber glass scrim with resin;

4.1.4 *Type IV*—Polyester core/polyamide sheath bicomponent spunbonded;

4.1.5 *Type V*—Polyester mat with polyester stitching; and

4.1.6 *Type VI*—Polyester mat plus polyester scrim with resin.

4.1.7 *Type VII*—Polyester scrim fabric with resin.

5. Materials and Manufacture

5.1 The fabric shall be a uniform, thin, porous mat of the primary thermoplastic polymer, with or without the addition of

¹ This specification is under the jurisdiction of ASTM Committee [D-8 on Roofing, Waterproofing, and Bituminous Materials](#) and is the direct responsibility of Subcommittee [D08 on Roofing and Waterproofing](#) and is the direct responsibility of Subcommittee [D08.04 on Felts and Fabrics for Bituminous Roofing and Waterproofing](#). Current edition approved July 10, 1999. Published September 1999. Originally published as D5665–95. Last previous edition D5665–99 on Felts and Fabrics. Current edition approved Dec. 1, 2006. Published December 2006. Originally approved in 1995. Last previous edition approved in 1999 as D 5665 – 99a.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* Vol 07-01, volume information, refer to the standard's Document Summary page on the ASTM website.



reinforcing stranded glass or thermoplastic yarns. Chemically bonding with a water-resistant resin or thermally bonding with other thermoplastic polymers shall be permitted.

6. Physical Properties, Thickness, and Mass

6.1 Fabrics shall conform to the thickness, mass, and physical properties presented in Table 1.

7. Unit Mass

7.1 Determine the unit mass of the fabric using the procedures described in Test Methods D 1117.

8. Workmanship, Finish, and Appearance

8.1 The finished material shall be free of visible defects such as ragged or untrue edges, folds, creases, wrinkles, tears and holes.

9. Sampling

9.1 Sample the material and determine the properties enumerated in this specification in accordance with the test procedures referenced herein (also see Practice D 1776).

10. Thickness

10.1 Determine the thickness of the fabric using the procedures described in Test Methods D 1777.

11. Breaking Load and Elongation

11.1 Determine the breaking load and elongation by the cut strip method as described in Test Methods D 4830 and D 5035. The preferred SI unit for breaking load is kN/m.

12. Trapezoid Tearing Strength

12.1 Determine the trapezoid tearing strength using the procedures described in Test Methods D 5733.

13. Puncture Strength

13.1 Determine the puncture strength using the procedures described in Test Methods D 4830.

14. Inspection

14.1 *Inspection*—Inspection shall be in accordance with the requirements of this specification.

14.2 *Inspection Alternatives*—Alternative inspection requirements shall be determined by and as agreed upon between the purchaser and the supplier.

15. Rejection and Resubmittal

15.1 *Failure to Conform*—Failure to conform to any of the requirements as stated in this specification constitutes grounds for rejection.

15.2 *Rejection Redress*—The supplier shall have the right to inspect the rejected materials. The supplier and the purchaser shall agree to the quantity of rolls deemed unacceptable. The supplier shall then have the right to submit the same number of new rolls as replacement.

16. Packaging and Package Marking

16.1 The rolls shall be wrapped or banded securely with a substantial grade of paper, plastic wrap, or taping that encircles the roll in a manner that will prevent slipping or unraveling.

16.2 No roll shall contain more than two pieces, and no more than 3 % of the rolls in any lot (pallet or shipment) shall contain two pieces. Pieces represent roll ends that can be one of the following: (1) individual and loose, (2) adhered, or (3) stitched to appear as one continuous piece. These rolls must be marked clearly with a red tag or other item to identify the location of the splice.

TABLE 1 Physical Properties of Thermoplastic Fabrics for Use In Cold-Applied Roofing and Waterproofing

Properties	Types						
	I	II	III	IV	V	VI	VII
Unit mass, nominal, g/m ² , (oz/yd ²)	51 (1.5)	119 (3.5)	125 (3.7)	75 (2.2)	125 (3.7)	73 (2.1)	58 (1.7)
(lb/100 ft ²)	(1.0)	(2.4)	(2.6)	(1.5)	(2.6)	(1.5)	(1.2)
Thickness, mm (mils), min	0.21 (8.3)	1.22 (48)	0.41 (16)	0.56 (22)	0.28 (11)	0.12 (4.7)	0.10 (4.0)
Breaking load, kN/m (lbf/in.), min, machine direction (MD) and crossmachine direction (CD)	1.6 (9)	4.6 (26)	20.5 (117)	4.2 (24)	5.6 (32)	7.0 (40)	6.5 (37)
Elongation, %, min, MD and CD	32	50	3.3	24	17	15	14
Trapezoid tearing strength, N (lbf), min, MD and CD	71 (16)	142 (32)	31 (7)	125 (28)	36 (8)	44 (10)	76 (17)
Puncture strength, N (lbf), min	102 (23)	187 (42)	53 (12)	98 (22)	329 (74)	49 (11)	49 (11)