



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

This standard is issued under the fixed designation D5665/D5665M; 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.

^{ε1} NOTE—Units information was editorially corrected in May 2014.

1. Scope

1.1 This specification covers thermoplastic fabrics such as polyester, polyester/polyamide bicomponent, or composites with fiberglass or polyester scrims 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 either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

2. Referenced Documents

2.1 ASTM Standards:²

[D123 Terminology Relating to Textiles](#)

[D1079 Terminology Relating to Roofing and Waterproofing](#)

[D1117 Guide for Evaluating Nonwoven Fabrics](#) (Withdrawn 2009)³

[D1776 Practice for Conditioning and Testing Textiles](#)

[D1777 Test Method for Thickness of Textile Materials](#)

[D4830 Test Methods for Characterizing Thermoplastic Fabrics Used in Roofing and Waterproofing](#)

[D5035 Test Method for Breaking Force and Elongation of Textile Fabrics \(Strip Method\)](#)

[D5733 Test Method for Tearing Strength of Nonwoven Fabrics by the Trapezoid Procedure](#) (Withdrawn 2008)³

3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, refer to Terminologies [D123](#) and [D1079](#).

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 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](#).

¹ This specification is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.04 on Felts, Fabrics and Bituminous Sheet Materials.

Current edition approved May 1, 2014. Published May 2014. Originally approved in 1995. Last previous edition approved in 2006 as D5665 – 99a (2006). DOI: 10.1520/D5665_D5665M-99AR14.

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* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.

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] [lb/100 ft ²]	51 [1.5] [1.0]	119 [3.5] [2.4]	125 [3.7] [2.6]	75 [2.2] [1.5]	125 [3.7] [2.6]	73 [2.1] [1.5]	58 [1.7] [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]

7. Unit Mass

7.1 Determine the unit mass of the fabric using the procedures described in Test Methods **D1117**.

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 **D1776**).

10. Thickness

10.1 Determine the thickness of the fabric using the procedures described in Test Methods **D1777**.

11. Breaking Load and Elongation

11.1 Determine the breaking load and elongation by the cut strip method as described in Test Methods **D4830** and **D5035**. 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 **D5733**.

13. Puncture Strength

13.1 Determine the puncture strength using the procedures described in Test Methods **D4830**.

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.

16.3 Unless otherwise specified, each package shall be marked plainly with the manufacturer's or supplier's name, product or brand name, or both, and the ASTM designation and type.

17. Keywords

17.1 cold-applied roofing and waterproofing; fiber glass scrim; polyester/polyamide reinforcement; polyester reinforcement; thermoplastic fabrics

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the ASTM website (www.astm.org/COPYRIGHT/).