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# Standard Specification for Thermoplastic Fabrics Used in Hot-Applied Roofing and Waterproofing[1]

This standard is issued under the fixed designation D 5726; 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 fiber glass or polyester scrims that can be used during the construction of hot-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 ~~inch-pound~~SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.5 *This standard does not purport to address all of the safety concerns, 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:*[2]

D 123 ~~Terminology Relating to Textile Materials~~ Terminology Relating to Textiles
D 1079 Terminology Relating to Roofing, Waterproofing, and Bituminous Materials
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 ~~Measuring~~ Thickness of Textile Materials
D 4830 Test Methods for Characterizing Thermoplastic Fabrics Used In Roofing and Waterproofing
D 5035 Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)
D 5733 Test Method for Tearing Strength of Nonwoven Fabrics by the Trapezoid Procedure
E 1 Specification for ASTM Liquid-in-Glass Thermometers

2.2 *Other Standard:*

AATCC Test Set No. 128, Wrinkle Recovery Test[3]

## 3. Terminology

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

## 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 polymer type, a combination of polymers, or the manufacturing process, or some combination thereof:

4.1.1 *Type I*—Polyester spunbonded with resin, unneedled;
4.1.2 *Type II*—Polyester spunbonded with resin, needled;
4.1.3 *Type III*—Polyester mat plus fiber glass scrim and resin; and

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[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 Fabrics for Bituminous Roofing and Waterproofing~~.
~~Current edition approved Nov. 10, 1998. Published January 1999. Originally published as D5726–95. Last previous edition D5726–97a.~~on Felts and Fabrics.
Current edition approved Dec. 1, 2005. Published December 2005. Originally approved in 1995. Last previous edition approved in 1998 as D 5726 – 98.

[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.

~~[3] Annual Book of ASTM Standards, Vol 04.04.~~

[3] Available from American Association of Textile Chemists and Colorists (AATCC), One Davis Dr., P.O. Box 12215, Research Triangle Park, NC 27709-2215.

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

## 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.

## 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 and presented herein.

## 10. Thickness

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

## 11. Breaking Load and Elongation

11.1 Determine the breaking load and elongation by the cut strip method 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 Method D 5733.

## 13. Puncture Strength

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

## 14. Heat Distortion/Stability

14.1 *Scope*—This test method, which uses hot silicone oil, is a procedure for simulating the distortion that may occur with the laying of a fabric roofing ply into hot bitumen during the construction of a hot-applied built-up roofing membrane.

14.2 *Summary of Test Method*—Fabric specimens are laid into hot silicone oil at ~~500°F (260°C),~~260°C (500°F), allowed to cool to room temperature, and then removed and measured for percent shrinkage and rated visually for distortion.

14.3 *Significance and Use*—Not all thermoplastic fabrics are suitable for hot-applied built-up roofing. This test procedure is designed to simulate hot-applied built-up application and to identify those thermoplastic fabrics that are suitable and not susceptible to excessive shrinkage or distortion, or both.

14.4 *Apparatus and Materials*:

**TABLE 1 Physical Properties of Thermoplastic Fabrics for Use in Hot-Applied Roofing and Waterproofing**

| Properties | Types | | | |
|---|---|---|---|---|
| | I | II | III | IV |
| ~~Unit mass, nominal, oz/yd$^2$ (g/m$^2$)~~ | ~~4.6 (155)~~ | ~~4.1 (140)~~ | ~~3.7 (125)~~ | ~~9.6 (327)~~ |
| Unit mass, nominal, g/m$^2$ (oz/yd$^2$) (lb/100 ft$^2$) | 155 (4.6) (3.2) | 140 (4.1) (2.8) | 125 (3.7) (2.6) | 327 (9.6) (6.7) |
| ~~Thickness, mils (mm), min~~ | ~~16 (0.42)~~ | ~~20 (0.51)~~ | ~~16 (0.41)~~ | ~~36 (0.92)~~ |
| Thickness, mm (mils), min | 0.42 (16) | 0.51 (20) | 0.41 (16) | 0.92 (36) |
| ~~Breaking load,lbf/in. (kN/m), min, MD and CD~~ | ~~50 (8.8 )~~ | ~~30 (5.2 )~~ | ~~117 (20.5)~~ | ~~85 (14.9)~~ |
| Breaking load, kN/m (lbf/in.), min, MD and CD | 8.8 (50) | 5.2 (30) | 20.5 (117) | 14.9 (85) |
| Elongation, % min, MD and CD | 46 | 25 | 3.3 | 34 |
| ~~Trapezoid tearing strength,lbf (N), min, MD and CD~~ | ~~35 (155)~~ | ~~24 (107)~~ | ~~7 (31)~~ | ~~57 (256)~~ |
| Trapezoid tearing strength, N (lbf), min, MD and CD | 155 (35) | 107 (24) | 31 (7) | 256 (57) |
| ~~Puncture strength,lbf (N), min~~ | ~~52 (231)~~ | ~~38 (169)~~ | ~~12 (53)~~ | ~~71 (316)~~ |
| Puncture strength, N (lbf), min | 231 (52) | 169 (38) | 53 (12) | 316 (71) |
| Appearance rating (AATCC Test Set No. 128), pass (4 and 5) and fail (1 to 3) | Pass | Pass | Pass | Pass |
| Heat distortion stability, % change max, MD and CD | 2 | 2 | 0.2 | 2 |