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Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing¹

This standard is issued under the fixed designation D4601/D4601M; 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.

This standard has been approved for use by agencies of the Department of Defense.

^{ε1} NOTE—Units information was editorially corrected in June 2012.

1. Scope

1.1 This specification covers asphalt impregnated and coated glass fiber base sheet, with or without perforations, for use as the first ply of the built-up roofing. When not perforated, this sheet is suitable for use as a vapor retarder, with a solid mopping of asphaltic material, under roof insulation or between multiple layers of roof insulation.

~~1.2 The values stated in SI units are to be regarded as the standard. The values in parentheses are for information only.~~

1.2 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

D146 Test Methods for Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing

D228 Test Methods for Sampling, Testing, and Analysis of Asphalt Roll Roofing, Cap Sheets, and Shingles Used in Roofing and Waterproofing

D1079 Terminology Relating to Roofing and Waterproofing

3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, refer to Terminology D1079.

4. Classification

4.1 Asphalt impregnated and coated glass fiber base sheet, Type I and Type II, are covered by this specification.

5. Materials and Manufacture

5.1 The mat shall be a thin, porous mat of uniformly distributed glass fibers, with or without additional reinforcing strands of glass yarn, and bonded with a water-resistant resinous binder.

5.2 In the process of manufacture, a single thickness of glass fiber mat shall be impregnated with hot asphalt, coated on one or both sides with a hot asphaltic material, and permitted to be surfaced with mineral surfacing.

5.3 The impregnating and coating material shall be a hot-applied asphalt permitted to be compounded with a mineral stabilizer.

5.4 The base sheet may be faced with a kraft paper on the bottom side.

6. Physical Requirements, Dimensions, and Masses

6.1 The material shall conform to the physical requirements, dimensions, and masses described in Table 1 and Table 2. It may have small pin holes throughout the sheet.

6.2 Perforated material shall conform to the physical requirements, dimensions, and masses described in Tables 1-3. It may have small pin holes throughout the sheet.

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 and Fabrics.

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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.

TABLE 1 Physical Requirements^A

Description	Type I	Type II
Breaking strength, minimum kN/m— (lbf/in.) longitudinal and transverse	3.9 (22)	7.7 (44)
Breaking strength, minimum kN/m (lbf/in.) longitudinal and transverse	3.9 [22]	7.7 [44]
Pliability, 13 mm (½ in.) radius		
Pliability, 13 mm [½ in.] radius		
Maximum failures, 10 specimens	0	0

^A To prevent the asphalt glass fiber base sheet from slipping from between the jaws of the tensile testing machine, insert a thin strip of soft gasket rubber between the felt in each of the four jaw faces of the machine.

TABLE 2 Dimensions and Masses^A

Description	Type I	Type II
Width of roll, mm (in.)	914 (36) ± 0.7 %	914 (36) ± 0.7 %
Width of roll, mm [in.]	914 [36] ± 0.7 %	914 [36] ± 0.7 %
	or	or
	as agreed between buyer and seller	as agreed between buyer and seller
Area of roll	as agreed between buyer and seller	as agreed between buyer and seller
Net dry mass—coated sheet minimum g/m ² (lb/100 ft ²)		
Net dry mass—coated sheet minimum g/m ² [lb/100 ft ²]		
—Average of all rolls	654 (13.4)	756 (15.5)
—Average of all rolls	654 [13.4]	756 [15.5]
—Individual rolls	625 (12.8)	708 (14.5)
—Individual rolls	625 [12.8]	708 [14.5]
Moisture, %, maximum at time of manufacture	1.0	1.0
Mass of desaturated glass mat, minimum, g/m ² (lb/100 ft ²)	68 (1.4)	83 (1.7)
Mass of desaturated glass mat, minimum, g/m ² [lb/100 ft ²]	68 [1.4]	83 [1.7]
Surfacing and stabilizer, max. %	70	65
Asphalt, minimum, g/m ² (lb/100 ft ²)	273 (5.6)	342 (7.0)
Asphalt, minimum, g/m ² [lb/100 ft ²]	273 [5.6]	342 [7.0]
Ash, % (glass mat only)	70 to 88	70 to 88

^A Test for compliance to this specification prior to application. Types cannot be differentiated after installation.

TABLE 3 Dimensions and Hole Spacing Requirements for Perforated Glass Fiber Base Sheet

Property	6.4 mm—([0.25 in.]) Perforations	25.4 mm—([1 in.]) Perforations
Diameter of perforation, mm (in.)	6.4 (0.25) ± 20 %	25.4 (1.0) ± 20 %
Diameter of perforation, mm [in.]	6.4 [0.25] ± 20 %	25.4 [1.0] ± 20 %
Spacing of perforations in each row, center to center, mm (in.)	152 (6.0) ± 25 %	152 (6.0) ± 25 %
Spacing of perforations in each row, center to center, mm [in.]	152 [6.0] ± 25 %	152 [6.0] ± 25 %
Spacing between adjacent rows, center to center, mm (in.)	152 (6.0) ± 25 %	152 (6.0) ± 25 %
Spacing between adjacent rows, center to center, mm [in.]	152 [6.0] ± 25 %	152 [6.0] ± 25 %

6.3 The finished product shall not crack nor be so sticky as to cause tearing or other damage upon being unrolled at temperatures between 4 and 60°C (40[40 and 140°F]–140°F).

7. Workmanship, Finish, and Appearance

7.1 The finished material shall be uniformly impregnated and coated with asphalt. It shall be free of visible defects such as holes, ragged or untrue edges, breaks, cracks, tears, and protrusions. This is not to exclude perforations for the specific purpose of providing for venting of gases during application or small pin holes.

8. Sampling and Test Methods

8.1 Sample the material and determine the properties described in this specification in accordance with Test Methods D228 unless otherwise indicated.

8.2 *Breaking Strength*—Determine in accordance with Test Methods D146, Section 13. (Specimens must be free from perforations.)

8.3 *Moisture Content*—Determine in accordance with Test Methods D146, Section 12.

8.4 *Pliability Testing*—Test in accordance with Test Methods D146, except the specimens shall be conditioned as in Test Methods D146, Strength Section 13.1.1.

8.5 Use rule to measure perforation size and spacing.

8.6 The percentage of surfacing and stabilizer shall be the ratio of mass of surfacing and stabilizer to the mass of the surfacing, stabilizer, and asphalt.

9. Inspection

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