



# Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing<sup>1</sup>

This standard is issued under the fixed designation D 4601; 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 reappraisal. A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal.

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

## 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 inch-pound units are to be regarded as the standard.

## 2. Referenced Documents

### 2.1 ASTM Standards:

D 146 Test Methods for Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing<sup>2</sup>

D 228 Test Methods for Asphalt Roll Roofing, Cap Sheets, and Shingles<sup>2</sup>

D 1079 Terminology Relating to Roofing, Waterproofing, and Bituminous Materials<sup>2</sup>

## 3. Terminology

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

## 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.

TABLE 1 Physical Requirements<sup>A</sup>

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

<sup>A</sup> 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.

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.

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 40 and 140°F (4 and 60°C).

## 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 D 228 unless otherwise indicated.

8.2 *Breaking Strength*—Determine in accordance with Test Methods D 146, Section 13. (Specimens must be free from perforations.)

8.3 *Moisture Content*—Determine in accordance with Test Methods D 146, Section 12.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D-8 on Roofing, Waterproofing, and Bituminous Materials and is the direct responsibility of Subcommittee D08.04 on Felts and Fabrics for Bituminous Roofing and Waterproofing.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.04.

**TABLE 2 Dimensions and Masses<sup>A</sup>**

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

<sup>A</sup> 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	0.25 in. (6.4 mm) Perforations	1 in. (25.4 mm) Perforations
Diameter of perforation, in. (mm)	0.25 (6.4) ± 20 %	1.0 (25.4) ± 20 %
Spacing of perforations in each row, center to center, in. (mm)	6.0 (152) ± 25 %	6.0 (152) ± 25 %
Spacing between adjacent rows, center to center, in. (mm)	6.0 (152) ± 25 %	6.0 (152) ± 25 %

8.4 *Pliability Testing*—Test in accordance with Test Methods D 146, except the specimens shall be conditioned as in Test Methods D 146, 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.

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

## 10. Rejection and Resubmittal

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

10.2 *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.

## 11. Packaging and Package Marking

11.1 Unless otherwise agreed upon between the supplier and purchaser, each product package shall be plainly marked with the supplier's name, the product brand, the ASTM designation, and type of bitumen if not evident in the label name of the product.

11.2 The rolls shall be securely wrapped or banded in a manner that completely encircles the roll and will prevent slipping or unrolling.

11.3 No roll shall contain more than two pieces, and no more than 3 % of the rolls in any lot shall contain two pieces. If a roll contains a manufacturing splice, the splice shall be clearly marked.

## 12. Keywords

12.1 asphalt impregnated; base sheet; built-up roof; coated; fiberglass; partially attached; vapor retarder

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