



Standard Specification for Asphalt Roll Roofing (Organic Felt)¹

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^{ε1} NOTE—Units information was editorially corrected in November 2013.

1. Scope

1.1 This specification covers asphalt roofing in sheet form, in widths agreed upon between the purchaser and the producer/supplier, composed of asphalt-saturated organic felt coated on both sides with asphalt. Class M and WS rolls are surfaced on the (exposed) weather side with mineral granules, except for any selvage. Class S rolls are surfaced with powdered talc, mica, or other fine mineral matter to prevent sticking.

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.

1.3 *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

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

D224 Specification for Smooth-Surfaced Asphalt Roll Roofing (Organic Felt) (Withdrawn 2002)³

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

Roofing and Waterproofing

D249 Specification for Asphalt Roll Roofing (Organic Felt) Surfaced with Mineral Granules (Withdrawn 2002)³

D371 Specification for Asphalt Roll Roofing (Organic Felt) Surfaced with Mineral Granules; Wide Selvage (Withdrawn 2002)³

D1079 Terminology Relating to Roofing and Waterproofing

D3019 Specification for Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, Asbestos-Fibered, and Non-Asbestos-Fibered

D4977 Test Method for Granule Adhesion to Mineral Surfaced Roofing by Abrasion

E96/E96M Test Methods for Water Vapor Transmission of Materials

3. Terminology

3.1 *Definitions*—Refer to Terminology **D1079** for definitions of terms used in this specification.

4. Classification

4.1 Class S (smooth) rolls shall be surfaced with fine mineral matter to prevent sticking.

4.1.1 *Type III*—Minimum net mass per unit area of roofing, 2495 g/m² [51.1 lb/100 ft²].

4.1.2 *Type IV*—Minimum net mass per unit area of roofing, 1943 g/m² [39.8 lb/100 ft²].

4.2 Class M (mineral) rolls shall be surfaced on the weather side with mineral granules, except for any selvage.

4.2.1 *Type II*—Minimum net mass of granule-surface portion, 3490 g/m² [71.5 lb/100 ft²].

4.3 Class WS (wide selvage) rolls shall be surfaced on the weather side with mineral granules for approximately half the width.

4.3.1 *Type III*—Minimum net mass per unit area, 1733 g/m² [35.5 lb/100 ft²].

4.3.2 *Type IV*—Minimum net mass per unit area, 2090 g/m² [42.8 lb/100 ft²].

5. Materials and Manufacture

5.1 In the process of manufacture, a single thickness of dry organic felt shall first be saturated with asphalt. A coating

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The materials covered in this standard were previously covered by three separate roll roofing material standards: Specifications **D224**, **D249**, and **D371**.

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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.

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

asphalt, compounded with or without a fine mineral stabilizer insoluble in water, shall be applied to one or both sides of the sheet. Class S rolls shall be surfaced on one side with a suitable material to prevent sticking in the roll. Class M and WS rolls shall be covered on the weather side with mineral granules, except for any selvage; the reverse side shall be covered with a suitable material to prevent sticking in the roll.

5.2 The felt shall be roofing felt primarily composed of organic fibers. The surface of the felt shall be uniformly and relatively smooth. Upon splitting or tearing on the bias, the felt shall appear reasonably free of lumps or particles of foreign substances.

6. Physical Properties

6.1 Class S rolls shall conform to the breaking strength and water permeance requirements prescribed in [Table 1](#).

6.2 Upon being unrolled, the finished product shall not crack at ambient temperatures above 10°C [50°F] nor be so sticky at any temperature below 60°C [140°F] as to cause tearing or material damage.

6.3 Class M rolls with a 102-mm [4-in.] wide selvage shall meet the lap strength requirements with Type II or Type III cement specified in Specification [D3019](#).

6.4 *Pliability at 25°C [77°F]*—At least eight strips out of ten from the granule-surfaced portion of the sheet shall not crack when tested in accordance with the appropriate section of Test Methods [D228](#). The samples shall be tested using a

mandrel with a radius of 12.7 mm [$\frac{1}{2}$ in.] for Class S roofing and 19 mm [$\frac{3}{4}$ in.] radius for Class M and WS roll roofing.

6.5 *Behavior on Heating to 80°C [176°F] for 2 h*—There shall be no more than 1.5 % volatile loss; and there shall be no flowing, sagging, blistering, or absorption of the asphalt coating; and any granular surfacing shall not slide more than 2 mm [$\frac{1}{16}$ in.] when tested in accordance with the appropriate section of Test Methods [D228](#).

7. Dimensions, Mass, and Permissible Variations

7.1 *Width*—The material shall be put up in rolls and shall be 914 mm [36 in.] wide, ± 0.7 %. Other widths agreed upon between the purchaser and the producer/supplier shall not be prohibited.

7.2 *Selvage*—Class M rolls are available without a selvage, with a 51 ± 6 -mm [$2 \pm \frac{1}{4}$ -in.] selvage, or with a 102 ± 6 -mm [$4 \pm \frac{1}{4}$ -in.] selvage. For Class WS rolls, the coated and granule-surfaced portion of the weather side shall have a uniform, minimum width of 432 ± 6 mm [$17 \pm \frac{1}{4}$ in.] for the standard 914-mm [36-in.] wide sheet, or as agreed upon between the purchaser and the producer/supplier. For other Class WS roll widths, the coated and granule-surfaced portion shall have a minimum width of one half the sheet width minus 25 ± 6 mm [$1 \pm \frac{1}{4}$ in.].

7.2.1 For Class WS rolls, when the surfaced portion of the weather side exceeds the minimum width, the sheet shall be marked with a conspicuous mopping line located from the

TABLE 1 Specifications for Asphalt Roll Roofing

Class	S	S	M	WS	WS
Type	III	IV	II	III	IV
Minimum net mass per unit area (of granule-surfaced portion for Classes M, and WS), g/m ² [lb/100 ft ²]	2495 [51.1]	1943 [39.8]	3490 [71.5]	1733 [35.5]	2090 [42.8]
Minimum net mass per standard roll, average kg [lb]:					
no selvage	N/A	N/A	36.5 [80.3]	N/A	N/A
2-in. selvage	N/A	N/A	35.6 [78.3]	N/A	N/A
4-in. selvage	N/A	N/A	36.5 [80.2]	N/A	N/A
wide selvage	N/A	N/A	N/A	19.1 (42.0)	22.0 [48.5]
Minimum mass of desaturated, moisture-free felt, g/m ² [lb/100 ft ²]	440 (9.0)	250 [5.2]	440 [9.0]	322 [6.6]	440 [9.0]
Minimum mass of asphalt saturant, soluble in 1,1,1-trichloroethane, based on the mass of desaturated, moisture free felt, % ^A	150	120	150	140	150
Minimum mass of coating, surfacing (talc, both sides) and mineral stabilizer, g/m ² [lb/100 ft ²]	879 [18.0]	879 [18.0]	N/A	N/A	N/A
Maximum mass of mineral matter passing a 212- μ m [No. 70] sieve, based on mass of the coating and surfacing (talc, both sides), %	60	60	60	60	60
Maximum % moisture at time of manufacture	3	3	3	3	3
Minimum mass of weather side coating and mineral stabilizer (excluding surfacing; talc and/or granules), g/m ² [lb/100 ft ²], [maximum g/m ² [lb/100ft ²]]	N/A	N/A	903 [18.5] [1582[32.4]]	903 [18.5] [1582[32.4]]	903 [18.5] [1582[32.4]]
Minimum mass of mineral matter passing a 3.35-mm [No. 6] sieve and retained on a 212- μ m [No. 70] sieve, g/m ² [lb/100 ft ²] ^B	N/A	N/A	1171 [24.0]	903 [18.5]	903 [18.5]
Maximum weight of displaced granules, g	N/A	N/A	1.0	1.0	1.0
Minimum breaking strength with fiber grain, kN/m of width [lbf/in. of width]	7.9 [45.0]	6.1 [35.0]	N/A	N/A	N/A
Maximum vapor transmission (permeance), ng/Pa-s-m ² [grains/h-ft ² -in. Hg]	29 [0.5]	29 [0.5]	N/A	N/A	N/A

^A For Class S rolls, the mass of saturant shall not be less than 1.2 times the mass of the dry felt for Type IV with a saturation efficiency of not less than 70 %.

^B Granule-surfaced portion only.

exposed weather edge a distance equal to one half the sheet width minus 25 ± 6 mm [$1 \pm \frac{1}{4}$ in.].

7.3 *Area*—The average area of the rolls shall not deviate more than 1.0 % from the stated areas.

7.4 *Masses*—The roofing shall conform to the masses prescribed in [Table 1](#).

8. Workmanship, Finish, and Appearance

8.1 The felt shall be thoroughly and uniformly saturated, and shall show no unsaturated spots at any point upon cutting 51-mm [2-in.] wide strips at random across the entire sheet and splitting them open to their full length.

8.2 The surface of the weather side shall be uniform in finish and texture. For Class M and WS rolls, the mineral granules shall be uniformly distributed over the surface in a smooth layer excluding any selvage, and be firmly embedded in the asphalt coating.

8.3 For Class M and WS rolls, the line of demarcation between the granule-surfaced portion of the weather side and any selvage shall be straight and parallel to the edges of the sheet. For Class S rolls, or the selvage of Class M and WS rolls, any coating applied shall have applied to it a material to prevent sticking in the roll. Application of this material shall be uniform, but not so great as to hinder proper adhesion between plies.

8.4 The asphalt coating (if any) and material applied to the reverse side to prevent sticking shall be uniform over the entire area of the sheet.

8.5 The finished material shall be free of visible defects such as holes, ragged or untrue edges, breaks, cracks, tears, protuberances, and indentations.

9. Sampling and Test Methods

9.1 Sample the material and determine the properties enumerated in this specification in accordance with Test Methods [D228](#). Sampling shall be from the granule-surfaced portion of Class M and WS rolls.

9.2 For Class M rolls, determine the lap strength in accordance with Specification [D3019](#).

9.3 Determine the moisture content in accordance with Test Methods [D146](#).

9.4 Determine the pliability in accordance the appropriate section of Test Methods [D228](#).

9.5 Determine the behavior on heating in accordance with the appropriate section of Test Methods [D228](#).

9.6 For Class M and WS rolls, determine the granule loss by abrasion in accordance with Test Method [D4977](#).

9.7 For Class S rolls, determine the water vapor transmission in accordance with Test Methods [E96/E96M](#), Procedure B.

9.8 For Class S rolls, determine the breaking strength in accordance with the appropriate section of Test Methods [D146](#).

10. Inspection

10.1 Inspection of the material shall be as agreed upon between the purchaser and the producer/supplier as part of the purchase contract.

11. Rejection and Resubmittal

11.1 Failure to conform to any one of the requirements prescribed in this specification shall constitute grounds for rejection. Rejection shall be reported to the producer/supplier promptly in writing. In case of rejection, the producer/supplier shall have the right to reinspect the rejected shipment and resubmit the lot after removal of those packages not conforming to the specified requirements.

12. Packaging and Marking

12.1 The roofing shall be put up in rolls. The rolls shall be tightly wound, and shall be securely wrapped with a substantial grade of paper completely encircling each roll and pasted at the overlap in such a manner as to prevent shifting from position. No roll shall contain more than two pieces, nor shall there be more than 3 % of the rolls containing two pieces in any shipment.

12.2 Unless otherwise agreed upon between the producer/supplier and the purchaser, each roll shall be plainly marked with the name and brand of the producer/supplier, the gross or net area of the roll, and the ASTM designation of the product, including class and type.

13. Keywords

13.1 asphalt; organic felt; rolled roofing; roof membranes; roofing sheets

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