



# Standard Specification for Asphalt Roll Roofing (Organic Felt) Surfaced with Mineral Granules<sup>1</sup>

This standard is issued under the fixed designation D 249; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

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

## 1. Scope

1.1 This specification covers asphalt roofing in sheet form, in widths as agreed upon by the purchaser and the seller, composed of asphalt-saturated organic felt coated on both sides with asphalt and surfaced on the weather side with mineral granules, except for any selvage.

1.2 *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:

- 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>
- D 3019 Specification for Lap Cement Used with Asphalt Roll Roofing<sup>2</sup>

## 3. Terminology

3.1 Refer to Terminology D 1079 for definitions of terms used in this specification.

## 4. Classification

4.1 *Type I*—Minimum net mass of granule-surfaced portion 74.0 lb/100 ft<sup>2</sup> (3610 gm/m<sup>2</sup>).

4.2 *Type II*—Minimum net mass of granule-surfaced portion 71.5 lb/100 ft<sup>2</sup> (3490 gm/m<sup>2</sup>).

## 5. Materials and Manufacture

5.1 In the process of manufacture, a single thickness of dry felt shall be impregnated with a hot asphaltic saturant, then

coated on both sides with a hot asphaltic coating, and finally surfaced 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 granule surfacing shall be omitted on any selvage, and the asphalt coating may be omitted on the weather side of the selvage. If the selvage is coated, it shall be covered with a material to prevent sticking in the roll that will not interfere with the bonding of lap cement.

5.3 The felt shall be produced primarily from organic fibers. The surface of the felt shall be uniform and relatively smooth. Upon splitting or tearing on the bias, the felt shall appear reasonably free of lumps of underbeaten stock and particles of foreign substances.

5.4 The asphaltic coating may be compounded with a fine mineral stabilizer substantially insoluble in water.

## 6. Physical Requirements

6.1 The finished material shall neither crack at ambient temperatures above 50°F (10°C) nor be so sticky at temperatures below 140°F (60°C) as to cause tearing or other material damage upon being unrolled.

6.2 *Pliability*—At least eight strips out of ten from the granule-surfaced portion of the sheet shall not crack when tested in accordance with Test Methods D 228, Section 17.

6.3 *Loss and Behavior on Heating*—There shall be no more than 1.5 % volatile loss, and the granular surfacing shall not slide more than 1/16 in. (2 mm) when tested in accordance with Test Methods D 228, Section 18.

6.4 Material with a 4-in. (102 mm) wide selvage shall meet the lap strength requirements with Type II cement specified in Specification D 3019.

## 7. Dimensions, Mass, and Permissible Variations

7.1 *Width*—The material shall be put up in rolls and shall be 36 in. (914 mm)  $\pm$  0.7 % wide, unless another width is agreed upon by the purchaser and the seller.

7.2 *Selvage*—The material may be offered without a selvage, with a 2  $\pm$  1/4 in. (51  $\pm$  6 mm) selvage, or with a 4  $\pm$  1/2 in. (102  $\pm$  12 mm) selvage.

7.3 *Area*—The standard 36-in. (914-mm) wide roll shall contain 108 ft<sup>2</sup> (10.0 m<sup>2</sup>)  $\pm$  1 % of sheet if there is no selvage or if there is a 2-in. (51-mm) selvage. The standard width roll shall contain 114 ft<sup>2</sup> (10.6 m<sup>2</sup>)  $\pm$  1 % of sheet if there is a 4-in.

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

(102-mm) selvage. For other widths, the average area of the rolls shall not deviate more than 1.0 % from the stated areas.

7.4 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 2-in. (51-mm) 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. Excluding any selvage, the mineral granules shall be uniformly distributed over the entire surface in a smooth layer and shall be firmly embedded in the asphalt coating.

8.3 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. If the selvage is coated, the application of material to prevent sticking in the roll shall be uniform.

8.4 The asphalt coating 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 indentions.

**9. Sampling and Test Methods**

9.1 Sample the material and determine the properties enumerated in this specification in accordance with Test Methods D 228.

9.2 *Lap Strength*—Specification D 3019.

9.3 *Moisture Content*—See Moisture section of Test Methods D 146.

**10. Inspection**

10.1 Inspection of the material shall be as agreed upon by the purchaser and the seller as part of the purchase contract.

**11. Rejection and Resubmittal**

11.1 Material that fails to conform to the requirements of this specification may be rejected. Rejection should be reported to the producer or supplier promptly, and in writing. In case of dissatisfaction with the results of any test, the producer or supplier may make claim for a rehearing, and 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 Special packaging shall be agreed upon by the purchaser and the seller as part of the purchase contract.

12.3 Each roll shall be plainly marked with the name and brand of the producer or supplier and the ASTM designation of the product.

**TABLE 1 Masses of Asphalt Roll Roofing**

	Type I	Type II
Net mass per standard width roll, min, avg, lb (kg):		
no selvage	83.0 (37.6)	80.3 (36.5)
2-in. (51-mm) selvage	81.0 (36.7)	78.3 (35.6)
4-in. (102-mm) selvage	83.0 (37.6)	80.2 (36.5)
Net mass per unit area of granule-surfaced portion, each roll, min, lb/100 ft <sup>2</sup> (g/m <sup>2</sup> )	74.0 (3610)	71.5 (3490)
Mass of desaturated, moisture-free felt, min, lb/100 ft <sup>2</sup> (g/m <sup>2</sup> )	10.0 (490)	9.0 (440)
Saturant in the felt, based on the mass of the desaturated, moisture-free felt, min, %	150	150
Mass of weather side coating, exclusive of mineral surfacing, min, lb/100 ft <sup>2</sup> (g/m <sup>2</sup> )	18.5 (903)	18.5 (903)
Ash of the desaturated felt, max, %	10	10
Mass of mineral matter passing a 3.35-mm (No. 6) sieve and retained on a 212-µm (No. 70) sieve, min, lb/100 ft <sup>2</sup> (g/m <sup>2</sup> )	24.0 (1171)	24.0 (1171)
Mineral matter passing a 212-µm (No. 70) sieve, based on the mass of the bitumen in the coatings and the mineral matter passing the 212-µm (No. 70) sieve, max, %	55	55
Moisture, at time of manufacture, max, mass, %	3	3

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