



Designation: D 225 – 02₃

Standard Specification for Asphalt Shingles (Organic Felt) Surfaced With Mineral Granules¹

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

1. Scope

1.1 This specification covers asphalt roofing in shingle form, composed of single or multiple thicknesses of organic felt saturated and coated on both sides with asphalt and surfaced on the weather side with mineral granules.

1.2 Shingles meeting this specification are intended to be applied with a headlap of not less than 51 mm (2 in.).

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

2. Referenced Documents

2.1 *ASTM Standards:*

¹ This specification is under the jurisdiction of ASTM Committee D08 on Roofing, Waterproofing, Roofing and Bituminous Materials Waterproofing and is the direct responsibility of Subcommittee D08.02 on Prepared Roofing, Shingles, and Siding Materials.

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- D 228 Test Method for Sampling, Testing, and Analysis of Asphalt Roll Roofing, Cap Sheets, and Shingles Used in Roofing and Waterproofing²
- D 1079 Terminology Relating to Roofing, Waterproofing, and Bituminous Materials²
- D 3161 Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method)²
- D 3462 Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules²
- D 4977 Test Method for Granule Adhesion to Mineral Surfaced Roofing by Abrasion²
- E 108 Test Methods for Fire Tests of Roof Coverings³

3. Terminology

3.1 *Definitions*—For definitions of terms, see Terminology D 1079.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *weather-exposed portion*—any portion of a shingle exposed to the weather when applied in accordance with the manufacturer’s instructions, excluding any part of the upper portion exposed by a cutout.

4. Classification

4.1 *Type I*—Uniform or nonuniform thickness shingles of any style (see Table 1).

4.2 *Type III*—Uniform or nonuniform thickness shingles of any style (see Table 1).

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. Laminated shingles need have mineral granules only on the weather side of the laminate. The reverse side shall be covered with a suitable material to prevent the shingles from sticking together in the package.

5.2 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.

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

6. Physical Requirements

6.1 During handling and application, the shingles shall not crack at ambient temperatures above 10°C (50°F) nor be so sticky at temperatures below 60°C (140°F) as to cause tearing or other material damage upon being unpacked.

6.2 *Loss and Behavior on Heating* —The shingles shall conform to the physical requirements prescribed in Table 2.

7. Dimensions, Mass, and Permissible Variations

7.1 The style and dimensions of the shingles shall be as agreed upon by the purchaser and the seller as part of the purchase contract. Shingles shall not vary more than ±6 mm (¼ in.) from nominal dimensions established for each style and size.

7.2 The shingles shall conform to the masses prescribed in Table 1.

² Annual Book of ASTM Standards, Vol 04.04.

³ Annual Book of ASTM Standards, Vol 04.07.

TABLE 1 Masses of Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules

	Type I	Type III
Average net mass per unit area, min, g/m ² (lb/100 ft ²)	4638 (95.0)	4379 (89.7)
Net mass of weather-exposed portion (each bundle) min, g/m ² (lb/100 ft ²)	4443 (91.0) ^A	4184 (85.7)
Net mass of upper portion (each bundle), min, g/m ² (lb/100 ft ²)
Mass of desaturated, moisture-free felt, min, g/m ² (lb/100 ft ²)	537 (11.0) ^A	439 (9.0) ^A
Mass of asphalt saturant based on the mass of the dry felt, min, %	165 ^A	165 ^A
Mass of weather-side coating on the weather-exposed portion, min, g/m ² (lb/100 ft ²)	1123 (23.0) ^A	1123 (23.0) ^A
Mass of weather-side coating on the upper portion, min, g/m ² (lb/100 ft ²)	1123 (23.0)	1123 (23.0)
Mass of reverse-side coating, min, g/m ² (lb/100 ft ²)	146 (3.0)	146 (3.0)
Mass of weather-side mineral matter passing a 3.35-mm (No. 6) sieve and retained on a 212-µm (No. 70) sieve, min, g/m ² (lb/100 ft ²)	903 (18.5) ^A	903 (18.5) ^A
Mass of weather-side mineral matter retained on an 850-µm (No. 20) sieve, based on the mass passing a 3.35-mm (No. 6) sieve and retained on a 212-µm (No. 70) sieve, min, %	55.0 ^A	55.0
Mass of weather-side mineral matter passing a 425-µm (No. 40) sieve, based on the mass passing a 3.35-mm (No. 6) sieve and retained on a 212-µm (No. 70) sieve, max, %	5.0 ^A	5.0 ^A
Mass of weather-side mineral matter passing a 212-µm (No. 70) sieve, based on the mass of the weather-side coating asphalt and the mineral matter passing the 212-µm (No. 70) sieve, max, %	60.0 ^A	60.0 ^A

^A The weather-exposed portion of each ply of a laminated shingle shall meet this requirement.

TABLE 2 Physical Requirements of Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules

	Maximum	Minimum
Behavior on heating:		
Loss of volatile matter, %	1.5	...
Sliding of granular surfacing, mm (in.)	2.0 (1/16)	...
Wind Resistance	...	Pass
Fire Resistance	...	Class C
Weight of displaced granules	1.0 g	...
<u>Pliability at 23 ± 2°C (73 ± 4°F)</u>		
<u>Weather side up machine direction</u>	...	<u>4 of 5</u> <u>shall pass</u>
<u>Weather side up cross direction</u>	...	<u>4 of 5</u> <u>shall pass</u>
<u>Weather side down machine direction</u>	...	<u>4 of 5</u> <u>shall pass</u>
<u>Weather side down cross direction</u>	...	<u>4 of 5</u> <u>shall pass</u>

8. Workmanship, Finish, and Appearance

8.1 The felt (each felt in a laminated shingle) shall be thoroughly and uniformly saturated and shall show no unsaturated spots at any point upon cutting 50-mm (2-in.) wide strips at random across the entire shingle and splitting them open to their full length.

8.2 The weather side shall be uniform in finish and texture, but may be embossed to simulate a wood grain. The mineral granules shall be uniformly distributed in a smooth layer over the entire surface and shall be firmly embedded in the asphalt coating. The mineral granules shall not have ruptured the felt fibers as a result of embedment or embossing.

8.3 The reverse side coating and the material applied to prevent the shingles from sticking together shall be uniform over the entire surface.

8.4 The finished shingles 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 prescribed in Table 1 in accordance with Test Method D 228 and determine conformance to the requirements of Table 2 in accordance with the following test methods:

9.1.1 *Weight Loss and Behavior on Heating*—Test Method D 228.

9.1.2 *Wind Resistance*— Test Method D 3161.

9.1.3 *Fire Test Classification*—Test Methods E 108, Class C.

9.1.4 *Weight of Displaced Granules* —Test Method D 4977.

9.1.5 *Pliability*—Determine the pliability according to the pliability test section of Specification D 3462.

10. Inspection

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

11. Rejection and Resubmittal

11.1 Failure to conform to the requirements prescribed in this specification shall constitute grounds for rejection. In case of rejection, the supplier shall have the right to reinspect the rejected material and resubmit the lot after removal of those packages not conforming to the requirements.

12. Packaging and Marking

12.1 Shingles shall be packed for shipment to ensure acceptance by common carrier for interstate transportation and to afford adequate protection from the normal hazards of handling.

12.2 Packages shall be plainly marked with the name and brand of the producer or supplier; the area of roof surface covered; and the style, type, and color of the product. Directions for application shall be included in at least every square or every third package of shingles.

13. Keywords

13.1 asphalt shingles; organic felt; roofing; shingles

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