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Standard Specification for Coal-Tar-Saturated Organic Felt Used in Roofing and Waterproofing[1]

This standard is issued under the fixed designation D227/D227M; 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.
This specification replaces Federal specification HH-R-595, Type 15C.

ε1 NOTE—Units information was editorially corrected in January 2012.

1. Scope

1.1 This specification covers coal-tar-saturated organic felt intended to be used with coal-tar pitches conforming to the appropriate requirements of Specification D450 in the construction of built-up roofs and in the construction of waterproofing systems.

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

D450 Specification for Coal-Tar Pitch Used in Roofing, Dampproofing, 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. Materials and Manufacture

4.1 In the process of manufacture, a single thickness of dry felt shall be saturated with refined coal-tar from which some of the more volatile constituents have been removed.

4.2 The felt shall be produced principally from organic fibers or mixtures thereof. 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 and particles of foreign substances.

5. Physical Requirements

5.1 The material shall conform to the physical requirements prescribed in Table 1.

5.2 The finished product shall not crack nor be so sticky as to cause tearing or other damage upon being unrolled at temperatures between 10 and 60°C [50 and 140°F].

6. Workmanship, Finish, and Appearance

6.1 The felt shall be saturated and shall show no unsaturated spots at any point upon cutting 50-mm [2-in.] wide strips at random across the entire sheet and splitting them open to their full length.

6.2 The surface of the felt shall not be coated or covered with talc or other substances that would tend to interfere with adhesion between the felt and the plying cement.

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

7. Sampling and Test Methods

7.1 Sample the material and determine the properties enumerated in this specification in accordance with Test Methods D146.

8. Inspection

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

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

[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, Fabrics and Bituminous Sheet Materials.

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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 for Coal-Tar-Saturated Organic Felt

Width of roll, mm [in.]	914 [36] ± 0.7 %[A]
Area of Roll	as agreed upon between the purchaser and the seller
Net mass of saturated felt, min, g/m^2 [lb/100 ft^2]	635 [13]
Moisture, at point of manufacture, max %[B]	4.3
Average breaking strength, min, kN/m [lbf/in.] of width[C]	
Longitudinal (with the fiber grain)	5.3 [30]
Transverse (across the fiber grain)	2.6 [15]
Pliability, 13 mm [½ in.] radius bend at 25°C [77°F]	no failures
Mass of desaturated (unsaturated) felt, min, g/m^2 [lb/100 ft^2][D]	254 [5.2]
Mass of saturant (coal-tar), min, g/m^2 [lb/100 ft^2][E]	356 [7.3]

[A] Other widths may be agreed upon between the purchaser and the seller.
[B] At time of manufacture, products with higher moisture content at time of installation may cause hot materials to foam, creating interply voids that may result in blisters.
[C] If specimens fail to conform to the requirements for breaking strength after conditioning for 2 h, a retest shall be made on specimens conditioned for 72 h. The material shall be accepted or rejected on the basis of the retest.
[D] The moisture-free felt shall meet this requirement prior to saturation. Coal-tar-saturated felt cannot be thoroughly desaturated by any known means; only an approximate value may be obtained through desaturation.
[E] The mass of the saturant shall be not less than 1.4 times the mass of the desaturated (unsaturated) dry felt.

9. Rejection and Resubmittal

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

9.2 *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.

10. Packaging and Package Marking

10.1 Unless otherwise agreed upon between the supplier and purchaser, each 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.

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

10.3 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.

11. Keywords

11.1 built-up roofs; coal tar saturated; membrane; organic felt; waterproofing