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AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Specification for Asphalt Roof Cement[1]

This standard is issued under the fixed designation D 2822; 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.

ε[1] NOTE—Section 13 was added editorially in April 1997.

1. Scope

1.1 This specification covers asphalt roof cement used for trowel application to roofings and flashings.

1.2 The following safety hazards caveat pertains only to the test methods described in this specification: *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 4 Test Method for Bitumen Content[2]

D 95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation[3]

D 140 Practice for Sampling Bituminous Materials[4]

D 312 Specification for Asphalt Used in Roofing[2]

D 449 Specification for Asphalt Used in Dampproofing and Waterproofing[2]

D 946 Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction[4]

D 1079 Terminology Relating to Roofing, Waterproofing and Bituminous Materials[2]

D 3409 Test Method for Adhesion of Asphalt Roof Cement to Damp, Wet, or Underwater Surfaces[2]

3. Terminology

3.1 For definitions of terms used in this specification, see Terminology D 1079.

4. Classification

4.1 *Type I* is made from asphalts characterized as self-healing, adhesive, and ductile, and conforming to the requirements of Specification D 312, Type I; Specification D 449, Types I or II; or Specification D 946.

4.1.1 Class I is used for application to essentially dry surfaces.

4.1.2 Class II is used for application to damp, wet, or underwater surfaces.

4.2 *Type II* is made from asphalt characterized by high softening point and relatively low ductility, and conforming to the requirements of Specification D 312, Types II or III; or Specification D 449, Type III.

4.2.1 Class I is used for application to essentially dry surfaces.

4.2.2 Class II is used for application to damp, wet, or underwater surfaces.

5. Materials and Manufacture

5.1 Asphalt roof cement shall consist of an asphalt base, volatile petroleum solvents, and mineral stabilizers including asbestos fiber, mixed to a smooth, uniform consistency suitable for trowel application.

6. Composition

6.1 Asphalt roof cement complying with this specification shall conform to the following composition limits:

	min	max
Water, %	...	1.0
Nonvolatile matter, %	70	...
Asbestos and other mineral stabilizers, %	15	45
Asphalt, %	30	60
Mineral matter based on original mass of insoluble residue, %	80	...

7. Physical Requirements

7.1 *Uniformity*—A thoroughly stirred sample shall show no separation of solvent or settling that cannot be overcome by moderate stirring after standing for 72 h at room temperature in a closed container.

7.2 *Workability*—The cement shall be of a consistency that will spread readily and permit troweling smooth coatings, 1/16 to 1/4 in. (2 to 6 mm) thick, on prepared roofing, saturated felt, and metal surfaces at ambient temperatures above 50°F (10°C).

7.3 *Behavior at 140°F (60°C)*—The cement shall show no evidence of blistering, and sag or slide shall be no greater than 6 mm (1/4 in.).

[1] This specification is under the jurisdiction of ASTM Committee D-8 on Roofing, Waterproofing, and Bituminous Materials and is the direct responsibility of Subcommittee D08.05 on Solvent-Bearing Bituminous Compounds for Roofing and Waterproofing.

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[2] *Annual Book of ASTM Standards*, Vol 04.04.

[3] *Annual Book of ASTM Standards*, Vol 05.01.

[4] *Annual Book of ASTM Standards*, Vol 04.03.

7.4 *Pliability at 32°F (0°C)*—There shall be no cracking or separation of the cement from the metal.

7.5 *Adhesion to Damp, Wet, or Underwater Surfaces*—The average of three test samples shall be greater than 80 % adhesion for compliance with Class II requirements.

8. Sampling

8.1 Sample the material from the original containers immediately after stirring to a uniform consistency in accordance with Practice D 140. Restir samples to ensure uniformity immediately before withdrawing portions for individual tests.

9. Test Methods

9.1 *Water*—Test Method D 95.

9.2 *Nonvolatile Matter*—Weigh 10 ± 1 g of cement to the nearest 0.01 g into each of two tared, flat-bottom dishes having a diameter of approximately 2.5 in. (64 mm) and walls ⅝ in. (16 mm) high. Heat the dish and contents in an oven at 320 to 330°F (160 to 166°C) until the residue shows a loss of not more than 0.05 g on successive hourly weighings; make each weighing after cooling in desiccator. Calculate the percent nonvolatile matter from the mass of the residue and the mass of the original sample as follows:

$$\text{Nonvolatile matter, \%} = (R_e/S) \times 100 \quad (1)$$

where:

R_e = mass of residue from evaporation, g, and

S = mass of original sample, g.

Record the average of the two separate determinations.

9.3 *Asbestos and Other Mineral Stabilizers, and Asphalt*—Test Method D 4, Procedure No. 2, but substitute trichloroethylene for carbon disulfide. Mineral matter shall be reported as asbestos and other mineral stabilizers, bitumen as asphalt. Calculate asphalt as percent of original, X_a, as follows:

$$X_a = N - (100\ B/A) \quad (2)$$

where:

N = nonvolatile matter from 8.2,

B = net mass of insoluble residue, including corrections, and

A = mass of the sample taken.

9.4 *Mineral Matter Based on Original Mass of Insoluble Residue*—Using the data obtained in accordance with Test Method D 4, Procedure No. 2, calculate the percent mineral matter based on the original mass of the insoluble residue, M_i, as follows:

$$M_i = (C/B) \times 100 \quad (3)$$

where:

C = net mass of ignited, reconstituted mineral matter, including any corrections, and

B = net mass of insoluble residue, including any corrections.

9.5 *Behavior at 140°F (60°C)*:

9.5.1 Prepare two test specimens by troweling cement through masks centered over two steel panels. The masks shall have openings 3 by 5 in. (75 by 125 mm) and shall be 3⁄32 in. (2.4 mm) ±10% thick. The panels shall be 6 by 6 in. (150 by 150 mm); 0.32 to 0.40 mm (30 to 28 gage) nominal thickness; capable of being bent smoothly and uniformly through 180° over a 1-in. (25-mm) diameter mandrel; and shall be free of oil and scale.

9.5.2 Immediately after troweling cement on the steel panels, remove the mask and embed a thread in each coating across the 3-in. (75-mm) dimension, parallel to and no more than 2 in. (50 mm) from one edge of the coating. Measure the distance of the thread from the edge of each test panel to the nearest 1⁄32 in. (1 mm).

9.5.3 Expose the test panels horizontally in a well-ventilated area for 60 min at 73 ± 4°F (23 ± 2°C), but not in direct sunlight.

9.5.4 Suspend the panels vertically with the thread closest to the top edge in an oven at 140 ± 3.6°F (60 ± 2°C). After 5 h, remove the test panels from the oven and examine for any sign of blistering. Then measure the distance of the thread from the edge of each panel again to determine the extent of any sagging or sliding. Report the average of the two measurements to the nearest 1⁄32 in. (1 mm).

9.6 *Pliability at 32°F (0°C)*:

9.6.1 Cool the coated metal panels from the preceding test to room temperature, and then immerse them in a water bath at 32°F (0°C) for 1 h.

9.6.2 Remove the panels from the water bath and immediately bend them over a 1-in. (25-mm) diameter mandrel through 180°. The bending shall be accomplished in approximately 2 s at a uniform rate, with the metal side of the test panel against the mandrel.

9.6.3 Immediately after bending, dry the panels thoroughly and examine the coating visually for cracking or bond failure. Ignore cracks less than ⅛ in. (3 mm) long unless they extend to the metal.

9.7 *Adhesion to Damp, Wet or Underwater Surfaces*—When tested in accordance with Test Method D 3409 the average of three test samples shall be greater than 80 % for compliance with Class II requirements.

10. Precision

10.1 The precision of the test methods used in this specification has not yet been determined.

11. Inspection

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

12. Rejection and Rehearing

12.1 Failure to conform to any of the requirements prescribed in this specification shall constitute grounds for rejection. In cases of rejection, the seller shall have the right to reinspect and resubmit the lot after removal of those packages not conforming to the specified requirements.

13. Keywords

13.1 asbestos; asphalt; roof cement