Designation: C 726 – 05$^{\epsilon 1}$

Standard Specification for Mineral Fiber Roof Insulation Board[1]

This standard is issued under the fixed designation C 726; 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—Sections 2.3 and 11.7 were editorially updated in June 2008.

1. Scope

1.1 This specification covers the composition and physical properties of mineral fiber insulation board used above structural roof decks as a base for built-up roofing and single ply membrane systems in building construction.

1.2 The use of thermal insulation materials covered by this specification may be regulated by building codes or other agencies that address fire performance, or both. The fire performance of the material should be addressed through standard fire test methods established by the appropriate governing documents.

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

1.4 *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 the regulatory limitations prior to use.*

2. Referenced Documents

2.1 The following standards, of the issue in effect on the date of material purchase, form a part of this specification to the extent specified herein:

2.2 *ASTM Standards:* [2]

C 165 Test Method for Measuring Compressive Properties of Thermal Insulations

C 168 Terminology Relating to Thermal Insulation

C 177 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus

C 203 Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation

C 209 Test Methods for Cellulosic Fiber Insulating Board

C 390 Practice for Sampling and Acceptance of Thermal Insulation Lots

C 518 Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus

C 1363 Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus

D 312 Specification for Asphalt Used in Roofing

D 450 Specification for Coal-Tar Pitch Used in Roofing, Dampproofing, and Waterproofing

D 2126 Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging

E 84 Test Method for Surface Burning Characteristics of Building Materials

2.3 *Other Referenced Documents:*

CAN/ULC-S102 Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies[3]

3. Terminology

3.1 *Definitions*—Terms used in this specification are defined in Terminology C 168.

4. Ordering Information

4.1 Orders for material purchased under this specification shall include:

4.1.1 Designation of this specification,

4.1.2 Product name,

4.1.3 Board dimensions,

4.1.4 Quantity of material, and

4.1.5 Special packaging or marking, (13.1 and 13.2) if required.

5. Materials and Manufacture

5.1 Mineral fiber roof insulation board shall consist of mineral fibers with an organic resin or other suitable binder.

[1] This specification is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.20 on Homogeneous Inorganic Thermal Insulations.

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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] Available from Underwriters' Laboratories of Canada, 7 Crouse Road, Scarborough, Ontario, Canada M1R 3A9.

5.2 For built-up roofing or polymer modified bitumen systems the board shall be faced during manufacture on one surface with a cover adequate for the application of Specification D 312 asphalt or Specification D 450 coal-tar pitch built-up roofing.

5.3 For single ply membrane systems the board may be faced or unfaced. For mechanically fastened single ply membrane systems the board may be faced or unfaced. For adhered single ply membrane systems the board shall be faced during manufacture on one surface with a cover adequate for the application of the adhesive used to secure the single ply membrane.

6. Physical Properties

6.1 The average thermal resistance, *R*, of specimens sampled in accordance with Practice C 390 shall be as specified by the manufacturer.

6.2 Nominal thickness required to obtain the specified resistance or conductance shall be as stated by the manufacturer.

6.3 Roof insulation boards shall have the limiting property values shown in Table 1.

7. Dimensions and Tolerances

7.1 The dimensions shall be as agreed upon between the purchaser and manufacturer. Tolerances shall be as follows:

	Tolerance, in. (mm)
Long dimension	±¼ (6)
Short dimension	±¼ (6)
Thickness	±⅛ (3)

The long and short dimension tolerances in this section are for individual boards. The tolerance for long and short dimension averages for at least 20 boards shall be ±1⁄16 in. (2 mm).

7.2 Board squareness shall be within required tolerance if the two diagonal measurements of the board differ by no more than ¼ in. (6 mm).

7.3 Board flatness shall be within required tolerance if, when board is placed concave side up, the average distance between a flat supporting surface and the bottom board surface at the corners does not exceed 5⁄16 in. (8 mm) over a temperature range from 20 to 140°F (−7 to 60°C). Maximum distance at an individual corner shall not exceed 9⁄16 in. (14 mm).

7.4 The thermal resistance of any single specimen shall not be more than 10 % below the value specified by the manufacturer.

7.5 Mass per unit area of any board, lb/ft^2 (kg/m^2) shall be within 10 % of the value specified by the manufacturer. Average mass per unit area of at least 20 boards shall be within 5 % of the value specified by the manufacturer.

TABLE 1 Physical Properties

Property	Requirement
Compressive resistance at 25 % deformation, min, psi (kPa)	12 (83)
Tensile strength perpendicular to board surface, min, lbf/ft^2 (kPa)	100 (4.8)
Breaking load, min, lbf (*N*)	20 (89)
Water absorption, max, volume %	10[A]
Response to thermal and humid aging, linear dimensional change, max, %	length and width: 5 thickness: 7

[A] There shall be no delamination during the water absorption test.

8. Workmanship, Finish, and Appearance

8.1 Insulation boards shall not have visible defects that will adversely affect service qualities.

9. Sampling

9.1 Sampling for qualification tests, if required, shall be in accordance with Practice C 390. Qualification tests will be conducted on the physical requirements in 6.1 and Table 1.

9.2 Sampling for inspection tests, if required, shall be in accordance with Practice C 390. Inspection requirements are dimensions (Section 7) plus any other properties as agreed upon between the purchaser and manufacturer.

10. Specimen Preparation

10.1 Specimens for all tests shall include any factory-applied cover. Take care that the cover is not partially detached in the process of cutting specimens.

10.2 Unless otherwise specified, condition samples prior to cutting specimens for at least 12 h at 73 ± 2°F (24 ± 1°C), 50 ± 5 % relative humidity before testing.

11. Test Methods

11.1 *Thermal Resistance*—Test Method C 177, C 518, or Test Method C 1363 at a mean temperature of 75 ± 2°F (24 ± 1°C) and 40°F (22°C) minimum temperature gradient or at a mean temperature agreed upon between the purchaser and manufacturer.

11.2 *Compressive Resistance*—Test Method C 165, Procedure A. Crosshead speed shall be 0.1± 0.01 in. (2.5 ± 0.25 mm) for each 1 in. (25.4 mm) of specimen thickness.

11.3 *Tensile Strength Perpendicular to the Board Surface*—Test Methods C 209, see Test Conditions and Tensile Strength Perpendicular to Surface, except that the specimens shall be 6 in. by 6 in. (150 mm by 150 mm).

11.4 *Breaking Load*— Test Methods C 203, Method I, Procedure D. Specimen width shall be 6 in. (152 mm) and support span shall be 10 in. (254 mm).

11.5 *Water Absorption*— Test Methods C 209 (see Water Absorption section). When material is thicker than 1.0 in., split the material to give a specimen thickness of 1.00 ± 0.03 in. The test specimen shall include the faced side of the material if applicable. Immerse the specimen with the faced surface down.

11.6 *Response to Thermal and Humid Aging*—Test Method D 2126. Expose 12 by 12 in. (305 by 305 mm) by actual thickness specimens to 158 ± 4°F (70 ± 2°C), 97 ± 3 % relative humidity for 168 ± 2 h.

11.7 *Surface Burning Characteristics of Building Materials (if required)*—Test with the bottom surface exposed to the test flame. Test in accordance with Test Method E 84. For Canada, test in accordance with Test Method CAN/ULC-S102. When the referenced Canadian document in this specification is referred to in applicable Canadian building codes, the editions, referenced by those building codes, shall govern.

11.8 *Dimensions*—Test Methods C 209, see Test Conditions, Thickness, and Size of Finished Board.

12. Rejection

12.1 Failure to conform to the requirements in this specification shall constitute cause for rejection. In case of rejection, the manufacturer shall have the right to reinspect the rejected shipment and resubmit the lot after removal of that portion not conforming to requirements.

13. Packaging and Marking

13.1 *Packaging*—Unless otherwise specified, the insulation shall be supplied in the manufacturer's standard commercial packages.

13.2 *Marking*—Unless otherwise specified, each package shall be marked with the material name, manufacturer's name or trademark, board dimensions, number of pieces, coverage area of the material in the package, and thermal resistance or conductance.

14. Keywords

14.1 board; insulation; mineral fiber; roof