



Standard Test Method for Covering Capacity and Volume Change Upon Drying of Thermal Insulating Cement¹

This standard is issued under the fixed designation C 166; 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.

1. Scope

1.1 Wet covering capacity and volume change upon drying are often of major importance in the application of thermal insulating cement. These properties can be easily determined at the same time that the determinations of dry covering capacity are made. Therefore, the procedures for determining these three properties are covered together in this test method.

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

1.3 *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:

C 163 Practice for Mixing Thermal Insulating Cement Samples²

C 168 Terminology Relating to Thermal Insulating Materials²

3. Terminology

3.1 *dry covering capacity*—the area covered in “ft², 1 in. in thickness/100 lb of dry cement” (m², 1 cm in thickness/100 kg of dry cement) after the wet cement has been molded and dried to constant weight in accordance with Section 5.

3.2 *volume change upon drying*—the percentage change in volume of the wet molded cement that occurs when the dry cement is mixed with the recommended amount of water, molded, and dried to constant weight in accordance with Section 5.

3.3 *wet covering capacity*—the area covered in “ft², 1 in. in thickness/100 lb of dry cement” (m², 1 cm in thickness/100 kg of dry cement) when the cement is mixed with the recommended amount of water and molded in accordance with Section 5.

¹ This test method is under the jurisdiction of ASTM Committee C-16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.31 on Chemical and Physical Properties.

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² *Annual Book of ASTM Standards*, Vol. 04.06.

3.4 Definitions in Terminology C 168 shall be considered as applying to the terms used in this test method.

4. Apparatus

4.1 *Mold*—A rigid mold having inside dimensions of 1 by 8 by 30 in. (25.4 by 203 by 762 mm) with one end and one face open, and a piece of wood or other suitable material 1 by 1½ by 7⅞ in. (25.4 by 38.1 by 200 mm) in dimensions for squaring up the end of the test specimen toward the open end of the mold.

4.2 *Wax Paper*—Sheets of wax paper 8 by 30 in. (200 by 762 mm) in dimensions.

4.3 *Engine Oil*.

4.4 *Trowel*—A 16-in. (about 400-mm) rectangular plasterer's trowel.

4.5 *Steel Rules*—Steel rules 18 and 36 in. (about ½ and 1 m) in length accurate to within ¼ in. (0.5 mm).

4.6 *Depth Gage*—A depth gage consisting of a rigid, pointed rod approximately ⅛ in. (3 mm) in diameter, fitted with a flat disk about ½ in. (13 mm) in diameter which may be moved along the rod either by a sliding action or by means of threads.

5. Sampling and Mixing

5.1 The cement shall be sampled and mixed in accordance with Practice C 163.

6. Procedure

6.1 Oil the inside surfaces of the mold well, or line them with wax paper in order to prevent the cement from sticking to the sides and to permit convenient removal of the specimen. Then place the mixed cement in the mold.

6.2 Trowel the cement in one layer and in two directions lengthwise of the mold without unnecessary compacting, until the surface is smooth and flush with the top edges of the mold. Sufficient wet cement shall be used to fill the mold when the piece of wood or other suitable material is in place in the open end of the mold and in contact with the cement, in order to make a square end and to prevent movement of the cement after troweling is completed.

6.3 Measure the thickness at nine points on the top surface of the sample as indicated in Fig. 1.

6.4 Make the thickness measurements within an accuracy of $\pm 2\%$ by means of a depth gage. Carefully push the point rod