



Designation: C166 – 05 (Reapproved 2023)

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

This standard is issued under the fixed designation C166; 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 standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

C163 Practice for Mixing Thermal Insulating Cement Samples

C168 Terminology Relating to Thermal Insulation

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 6.

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 6.

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 6.

3.4 Definitions in Terminology C168 shall be considered as applying to the terms used in this test method.

4. Significance and Use

4.1 This test method is used to determine the wet covering and volume change upon drying of thermal insulating cement.

5. Apparatus

5.1 *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.

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

5.3 *Engine Oil*.

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

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

5.6 *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 is moved along the rod either by a sliding action or by means of threads.

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

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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.