



Designation: C163 – 05 (Reapproved 2023)

Standard Practice for Mixing Thermal Insulating Cement Samples¹

This standard is issued under the fixed designation C163; 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 This practice covers mixing thermal insulating cement samples with water in the preparation of specimens for use in all tests on the cement.

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
C168 Terminology Relating to Thermal Insulation

3. Terminology

3.1 *Definitions*—Terminology **C168** shall be considered as applying to the terms used in this practice.

4. Significance and Use

4.1 Insulating cement must be mixed with water and molded to prepare for testing.

¹ This practice 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.

5. Apparatus

5.1 *Mixing Surface or Pan*, nonabsorbent and corrosion-resistant surface or shallow pan approximately 3 ft (0.9 m) square.

5.2 *Trowels*, 16-in. (about 400-mm) rectangular plasterer's trowel, and a 9-in. (about 230-mm) pointed trowel.

5.3 *Scales*, accurate to within 0.5 oz (14.1 g) with a minimum capacity of 15 lb (about 6.8 kg).

5.4 *Water Container*, suitable for holding approximately 2 gal (about 8 L) of water.

5.5 *Mold*, constructed of either wood or metal.

6. Mixing Water

6.1 The mixing water shall be equal in quality to that used for domestic purposes. Its temperature shall be between 70 and 75°F (21 and 24°C). The quantity used shall be that which gives the consistency as recommended by the manufacturer.

7. Procedure

7.1 Test at least one specimen from each lot of cement unless otherwise agreed upon between user and supplier or as shown otherwise in a material specification.

7.2 Weigh the specimen (at least 3 lb (1.4 kg)) of dry cement and place it on a smooth, nonabsorbent, and corrosion-resistant surface.

7.3 Form a crater in the center of the dry cement. Pour the mixing water slowly into the crater and determine the weight used.

7.4 Fold the material on the outer edge into the crater by means of the rectangular trowel.

7.5 After the water has been in contact with the cement for the period of time recommended by the manufacturer, mix rapidly with the rectangular trowel until the entire batch is of uniform consistency.

7.6 Mold the cement specimen immediately after mixing or the time frame recommended by the manufacturer.

8. Preparation of Dried Specimens for Later Tests

8.1 Cover a piece of flat, heavy-gage metal with wax paper. Place a flat mold 2 in. (51 mm) deep on the covered metal plate.

8.2 Using the rectangular trowel, place the wet mixed cement in the mold and trowel it sufficiently to ensure a solid, uniform block with a minimum of voids. Finish by troweling the top of the cement flush with the mold. Use the pointed trowel to pack small quantities of cement that are inaccessible to the large rectangular trowel.

8.3 Allow the filled mold to remain at room temperature for 24 h.

8.4 Remove the mold. Place the wet molded block and supporting metal plates in a vented oven maintained at a temperature between 215 and 250°F (102 and 121°C). Dry to constant weight.

8.5 Cut the dry molded block to the desired dimensions using a band saw, high-speed abrasive wheel, or other suitable means that will not subject the block to damaging stresses. Remove a minimum of material from the top to obtain a smooth, flat surface, and any excess material from the bottom of the molded sample to produce the final thickness desired.

9. Keywords

9.1 thermal insulating cement

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