



## Standard Test Method for Wet Adhesion of Thermal Insulating Cements to Metal<sup>1</sup>

This standard is issued under the fixed designation C 383; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

### 1. Scope

1.1 This test method measures the relative adhesion of wet mixed thermal insulating cements to a metal test surface. While this test method is valuable in rating these products generally, the wet adhesion of the cement to one type of surface cannot be construed as being indicative of the wet adhesion to another type of surface.

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 Samples<sup>2</sup>

C 168 Terminology Relating to Thermal Insulating Materials<sup>2</sup>

### 3. Terminology

3.1 *Definitions*—Terminology C 168 shall apply to terms used in this test method.

3.2 *Description of Term Specific to This Standard:*

3.2.1 *wet adhesion*—of thermal insulating cement to a test surface, the force, expressed in pounds per square foot (or kilograms per square metre) of contact area, that must be applied in a direction parallel with the surface in order to slide the cake of cement from its initial area of contact.

### 4. Significance and Use

4.1 Where the wet adhesive strength of thermal insulating cement is low, it is difficult to apply it to a desirable thickness or over a large area, particularly on vertical metal surfaces, without having the material slide. The wet adhesion test, which

measures the force required to cause a freshly applied test cake of the wet mixed cement to move along a suitable test surface, will indicate the ability of the cement to remain in place during normal application to a vertical metal surface.

4.2 Many factors such as the quality and amount of mixing water used, the method of mixing and applying the cement, the type and condition of the surface to be insulated, and the temperature of the surface will affect the wet adhesion of thermal insulating cement.

### 5. Apparatus

5.1 *Test Plate*—A stainless steel test plate 24 by 8 in. by No. 10 gage (610 by 200 by 3.4 mm) or heavier thickness, with at least the test surface being smoothly finished.

5.2 *Mold Frames*—Three, square, nondemountable mold frames made from No. 12 gage (about 2.7 mm) aluminum having inside dimensions 6 by 6 by 1 in. (152 by 152 by 25 mm).

5.3 *Small Pointing Trowel and Plasterer's Trowel.*

5.4 *Loading Assembly*—A base for holding the test plate in an immovable and level position with a ball bearing or equally frictionless pulley fastened to one end of the base in such a fashion that a cord can be placed around the cement cake under test. The cord shall be extended over the pulley and used to support a container.

### 6. Sampling, Test Specimens, and Test Units

6.1 Sample at least 3 lb (1.4 kg) of dry cement. The specimen for test is to be taken from the middle of a bag, so as to be representative of material from the entire bag.

6.2 Mix the cement in accordance with Practice C 163. The temperature of the mixing water shall be between 70 and 75°F (21 and 24°C).

6.3 Carefully clean the test plate with soap and water, rinse in boiling water, and air dry. Take care not to touch the cleaned test surface of the plate with the fingers prior to applying test cakes of cement. Arrange the three mold frames symmetrically on the surface of the test plate (see Fig. 1). A jig to hold them in this arrangement during the application of the cement is desirable.

6.4 Form a properly mixed cement into a 3 to 4-in. (76 to 102-mm) high circular mound. Smooth the mound and allow it to set for 1 h after mixing to absorb the water thoroughly. Then mix the cement once more before testing and again form it into a circular mound 3 to 4 in. high.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C-16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.32 on Mechanical Properties.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.06.