



Designation: C 932 – 03

## Standard Specification for Surface-Applied Bonding Compounds for Exterior Plastering<sup>1</sup>

This standard is issued under the fixed designation C 932; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the Department of Defense.*

### 1. Scope\*

1.1 This specification covers minimum requirements for exterior surface-applied bonding compounds for improving the adhesion of cementitious material to concrete or other masonry surfaces or any structurally sound surfaces.

1.2 This specification also covers test methods for determining performance requirements and physical properties.

1.3 The values stated in inch-pound units are to be regarded as the standard. The SI metric values given in parentheses are approximate and are provided for information purposes only.

1.4 The following safety hazards caveat pertains only to the test methods described in Sections 9, 10, 11, and 12 in this specification: *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 11 Terminology Relating to Gypsum and Related Building Materials and Systems<sup>2</sup>

C 109/C 109M Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)<sup>2</sup>

C 150 Specification for Portland Cement<sup>2</sup>

C 305 Practice for Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency<sup>2</sup>

C 511 Specification for Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes<sup>2</sup>

C 778 Specification for Standard Sand<sup>2</sup>

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee C11 on Gypsum and Related Building Materials and Systems and is the direct responsibility of Subcommittee C11.02 on Specifications and Test Methods for Accessories and Related Products.

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<sup>2</sup> Annual Book of ASTM Standards, Vol 04.01.

### 3. Terminology

3.1 Definitions used in this specification shall be in accordance with Terminology C 11.

### 4. Physical Properties

4.1 *Surface Applied Bonding Compound*—A freeze-thaw stable composition, suitable for brush, roller, or spray application. It shall be tinted to show by visual inspection where it has been applied. The tint shall not bleed through the material being bonded.

4.2 *Consistency*—The bonding compound shall be free of foreign matter as determined by visual inspection and shall be of such uniform consistency that when applied in accordance with the producer's directions by brush, roller, or spray to concrete, masonry, or other structurally sound surface, the bonding compound shall flow on evenly and dry uniformly.

4.3 *Film Characteristics*—The film-forming property shall be determined by visual inspection to determine the presence of a continuous film not broken by fisheyes, cracking, pull-back, or any other discontinuity in the film surface. It shall not be noticeably affected by alkaline surfaces or weak acids.

### 5. Performance Requirements

5.1 *Bonding Capability*—The bonding compound shall be capable of bonding cementitious materials when applied in accordance with the producer's directions and tested as specified in Section 12.

5.2 *Degradation*—Bonding compound which separates shall be able to be re-mixed to a uniform consistency when tested as specified in Section 10.

5.3 *High Temperature Test*—The bond strength shall be not less than 150 psi (1034 kPa) when tested as specified in Section 9.

5.4 *Freeze-Thaw Stability*—The bond strength shall be not less than 150 psi (1034 kPa) and 100 psi (690 kPa) when tested under the dry and wet conditions, respectively, as specified in Section 11.

5.5 *Tensile Bond Strength*—Bond strength of a fresh sample or a 6-month old sample of bonding compound shall have an average tensile strength of not less than 150 psi (1034 kPa) and

\*A Summary of Changes section appears at the end of this standard.

100 psi (690 kPa) when tested under the dry and wet conditions, respectively, as specified in Section 12.

## 6. Sampling

6.1 Take a sample of not less than 2.2 lb (1000 g) from each shipment or consignment for analysis and tests. Except in special cases, take the sample from not less than three separate containers, chosen at random. In addition, take samples from containers that appear to be nonrepresentative, and test separately. Place the samples immediately in airtight glass containers and transport to the testing laboratory in these containers. Take precautions to reduce evaporation or drying to a minimum. Thoroughly mix the bonding compound in the container if there is a tendency for liquid phase separation.

## 7. Apparatus

7.1 *Moist Cabinet*—Specification C 511.

7.2 *Oven*—A forced draft type oven, having a temperature controlled at  $140 \pm 5^\circ\text{F}$  ( $60 \pm 3^\circ\text{C}$ ) for high temperature tests.

7.3 *Freezer*—A freezer having a controlled temperature of  $-10 \pm 2^\circ\text{F}$  ( $-23 \pm 1^\circ\text{C}$ ).

7.4 *Balance*—A balance capable of weighing not less than 5.5 lb (2500 g) at a precision of 0.0002 lb (0.1 g).

7.5 *Timing Device*—An instrument capable of reading to the nearest second.

7.6 *Tamper*—A tamper made up of a nonabsorptive, non-abrasive, non-brittle material and having a cross section of  $\frac{1}{2}$  in. by 1 in. ( $13 \times 25$  mm) and approximately 5 to 6 in. (130 to 150 mm) long. The tamping face shall be flat and at right angles to the length of the tamper.

7.7 *Straight Edge*—A steel straight edge not less than 4 in. (100 mm) long and not less than  $\frac{1}{16}$  in. (1.6 mm) nor more than  $\frac{1}{8}$  in. (3.2 mm) in thickness.

7.8 *Spatula*—A spatula with a metal blade 6 in. (150 mm) in length and  $\frac{1}{2}$  in. (13 mm) in width, with straight edges.

7.9 *Paint Brush*—A standard 1 in. (25 mm) wide brush, with synthetic bristles.

7.10 *Testing Machine*—Any type that is of sufficient capacity and that is capable of applying the load continuously and without shock at the rate of 0.05 in. (1.27 mm) per minute, with provision for adjustment of the rate of loading.

7.11 *Briquet Molds*—The molds for making test specimens shall be made of metal not attacked by the mortar and shall have sufficient material in the sides to prevent spreading during molding. Gang molds, when used, shall be of the type shown in Fig. 1. The dimensions of the briquet molds shall conform to the following requirements: width of mold, between inside faces, at waist line of the briquet, 1 in. (25.4 mm) with

permissible variations of  $\pm 0.01$  in. (0.25 mm) for molds in use and  $\pm 0.005$  in. (0.13 mm) for new molds; thickness of molds measured at the point of greatest thickness on either side of the mold at the waist line, 1 in. (25.4 mm) with permissible variations of  $+0.004$  in. (0.10 mm) and  $-0.002$  in. (0.05 mm) for new molds and  $-0.02$  in. (0.5 mm) for molds in use. The briquet specimens shall conform to the dimensional requirements shown in Fig. 2.

7.12 *Saw*—A table saw equipped with an abrasive cutting blade or other blade suitable for cutting cementitious materials.

7.13 *Clips for Briquet Testing Machine*—The clips for holding the tension test specimen shall be in accordance with Fig. 3.

## 8. Conditioning

8.1 *Room Temperature and Humidity*—Maintain the air temperature in the vicinity of the mixing and testing area at  $70 \pm 5^\circ\text{F}$  ( $21 \pm 3^\circ\text{C}$ ). Maintain the relative humidity at  $50 \pm 2\%$ .

8.2 *Temperature of the Mixing Water*— $72 \pm 2^\circ\text{F}$  ( $22 \pm 1^\circ\text{C}$ ).

## 9. High Temperature Test

9.1 *Significance and Use*—This test method provides procedures for evaluating the adhesive strength of bonding compounds after being exposed to accelerated aging at high temperature.

9.2 *Specimen Preparation*—For each test specimen, transfer the bonding compound, taken from the sample obtained, into a standard 1 pt. (500 mL) glass container.

9.3 *Procedure*—Place the specimen in the oven for 30 days. Remove the container, allow the compound to cool to room temperature, mix the compound to a uniform consistency, and test as specified in Section 12.

9.4 *Tests and Retests*—Test six briquets and report the average of the test results. If the result of any one of the six tests varies more than 15 % from the average, reject it and report the average of the other five tests. If the results from more than two tests vary more than 15 % from the average, reject the series and retest.

9.5 *Precision and Bias*—The precision and bias of the high temperature test for determining bond strength after exposure to high temperature are essentially the same as specified in the test method for bond strength, paragraph 12.7.

## 10. Degradation Test

10.1 *Significance and Use*—This test method simulates the effects of high temperature storage on the physical properties of bonding compound.

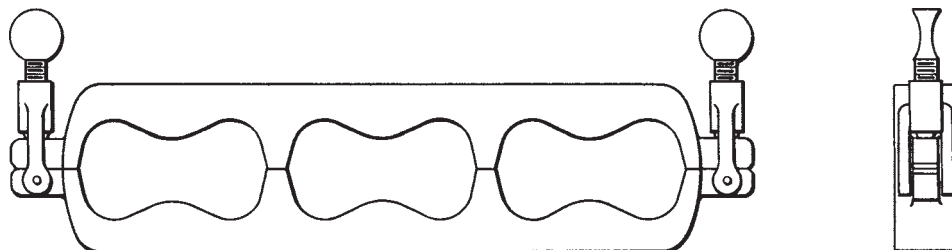


FIG. 1 Briquet Gang Mold