



Standard Practice for Preparing and Testing Specimens from Shotcrete Test Panels¹

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1. Scope

1.1 This practice covers procedures for preparing test panels of dry-mix or wet-mix shotcrete and for testing specimens sawed or cored from the panels.

1.2 The values stated in inch-pound units are to be regarded as the 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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- C 42 Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete²
- C 78 Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)²
- C 138 Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete²
- C 143 Test Method for Slump of Hydraulic Cement Concrete²
- C 171 Specification for Sheet Materials For Curing Concrete²
- C 231 Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method²
- C 457 Test Method for Microscopical Determination of Parameters of the Air-Void System in Hardened Concrete²
- C 511 Specification for Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes³
- C 513 Test Method for Obtaining and Testing Specimens of Hardened Lightweight Insulating Concrete for Compressive Strength²
- C 642 Test Method for Specific Gravity, Absorption, and Voids in Hardened Concrete²
- C 995 Test Method for Time of Flow of Fiber-Reinforced

Concrete Through Inverted Slump Cone²
C 1018 Test Method for Flexural Toughness and First-Crack Strength of Fiber-Reinforced Concrete (Using Beam with Third-Point Loading)²

3. Summary of Practice

3.1 Test panels of shotcrete are fabricated using the personnel, materials, equipment, and shooting positions under investigation. Specimens are core drilled or sawed from these panels for evaluation.

4. Significance and Use

4.1 Specimens obtained in accordance with the procedure section of this practice may be used for preconstruction studies of shotcrete mixtures, to qualify nozzlemen and equipment, or for quality control, or compressive or flexural strength testing, during the progress of a project.

5. Test Panels

5.1 Forms for Panels:

5.1.1 The form for receiving the shotcrete shall be either wood or steel construction and sufficiently rigid to prevent dislodging of the shotcrete through vibration or deformation. The form shall have a minimum width and length of 24 in. (610 mm) and a minimum depth of 3½ in. (89 mm) with either square or sloped sides. Larger panels may be desirable for qualifying nozzlemen, equipment, or mixture design.

5.1.1.1 *Wood Forms*—Wood forms shall have a back made from plywood at least ¾-in. (19-mm) thick. Side pieces shall be made from a standard 2 by 4 plank.

5.1.1.2 *Steel Forms*—Steel forms shall be made using material having a minimum thickness of ⅜-in. (5-mm) (No. 7 gage).

6. Materials

6.1 *Dry-Mix Process*—The test mixture shall be of the same materials and proportions being used or proposed for use in the structure.

6.2 *Wet-Mix Process*—The test mixture shall be of the specified slump and have the specified air content and unit weight, or, when fibers are used, the specified time of flow, air content, and unit weight as the mixture being used or proposed for use in the structure. Determine the air content by Test Method C 231, the unit weight by Method C 138, slump by

¹ This practice is under the jurisdiction of ASTM Committee C-9 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.46 on Shotcrete.

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² *Annual Book of ASTM Standards*, Vol 04.02.

³ *Annual Book of ASTM Standards*, Vol 04.01.