



Standard Practice for Making and Curing Concrete Test Specimens in the Field¹

This standard is issued under the fixed designation C 31/C 31M; 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.

This practice has been approved for use by agencies of the Department of Defense. Consult the DoD Index of Specifications and Standards for the specific year of issue which has been adopted by the Department of Defense.

1. Scope

1.1 This practice covers procedures for making and curing cylindrical and prismatic beam specimens from representative samples of fresh concrete for a construction project.

1.2 The concrete used to make the molded specimens shall have the same levels of slump, air content, and percentage of coarse aggregate as the concrete it represents. This practice is not satisfactory for making specimens from concretes not having a measurable slump or requiring other sizes and shapes of specimens to represent a product or structure.

1.3 The values stated in either inch-pound units or SI units shall be regarded separately as standard. The SI units are shown in brackets. The values stated may not be exact equivalents; therefore each system must be used independently of the other. Combining values from the two units may result in nonconformance.

1.4 *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.*

1.5 The text of this standard references notes which provide explanatory material. These notes shall not be considered as requirements of the standard.

2. Referenced Documents

2.1 ASTM Standards:

- 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 172 Practice for Sampling Freshly Mixed Concrete²
- C 173 Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method²
- C 192 Practice for Making and Curing Concrete Test Specimens in the Laboratory²
- C 231 Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method²
- C 470 Specification for Molds for Forming Concrete Test Cylinders Vertically²

C 511 Specification for Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes³

C 617 Practice for Capping Cylindrical Concrete Specimens²

C 1064 Test Method for Temperature of Freshly Mixed Portland-Cement Concrete²

2.2 *American Concrete Institute Publication.*⁴

CP-1 Concrete Field Testing Technician, Grade I

3. Significance and Use

3.1 This practice provides standardized requirements for making, curing, protecting, and transporting concrete test specimens under field conditions.

3.2 If the specimens are made and standard cured, as stipulated herein, the resulting test data are able to be used for the following purposes:

3.2.1 Acceptance testing for specified strength,

3.2.2 Checking adequacy of mixture proportions for strength, and

3.2.3 Quality control.

3.3 If the specimens are made and field cured, as stipulated herein, the resulting test data are able to be used for the following purposes:

3.3.1 Determination of the time the structure is permitted to be put in service,

3.3.2 Comparison with test results of standard cured specimens or with test results from various in-place test methods,

3.3.3 Adequacy of curing and protection of concrete in the structure, or

3.3.4 Form or shoring removal time requirements.

4. Apparatus

4.1 *Molds, General*—Molds for specimens or fastenings thereto in contact with the concrete shall be made of steel, cast iron, or other nonabsorbent material, nonreactive with concrete containing portland or other hydraulic cements. Molds shall hold their dimensions and shape under all conditions of use. Molds shall be watertight during use as judged by their ability to hold water poured into them. Provisions for tests of water leakage are given in the Test Methods for Elongation, Absorption, and Water Leakage

¹ This practice is under the jurisdiction of ASTM Committee C-9 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.61 on Testing Concrete for Strength.

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

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

⁴ Available from American Concrete Institute, P.O. Box 19150, Detroit, MI 48219-0150.