



Designation: C 1064/C 1064M – 04

## Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete<sup>1</sup>

This standard is issued under the fixed designation C 1064/C 1064M; 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 test method covers the determination of temperature of freshly mixed hydraulic-cement concrete.

1.2 The values stated in inch-pound or SI units are to be regarded separately as standard. Within the text, SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

1.3 The text of this standard references notes and footnotes that provide explanatory information. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of this standard.

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. (Warning—Fresh hydraulic cementitious mixtures are caustic and may cause chemical burns to skin and tissue upon prolonged exposure.<sup>2</sup>)*

### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>3</sup>

C 172 Practice for Sampling Freshly Mixed Concrete

### 3. Significance and Use

3.1 This test method provides a means for measuring the temperature of freshly mixed concrete. It may be used to verify conformance to a specified requirement for temperature of concrete.

3.2 Concrete containing aggregate of a nominal maximum size greater than 3 in. [75 mm] may require up to 20 min for the transfer of heat from aggregate to mortar. (See ACI Committee 207.1R Report.<sup>4</sup>)

### 4. Apparatus

4.1 *Container*, shall be large enough to provide at least 3 in. [75 mm] of concrete in all directions around the sensor of the temperature measuring device; concrete cover must also be at least three times the nominal maximum size of the coarse aggregate.

4.2 *Temperature Measuring Device*, shall be capable of accurately measuring the temperature of the freshly mixed concrete to  $\pm 1^\circ\text{F}$  [ $\pm 0.5^\circ\text{C}$ ] throughout a range of 30° to 120°F [0° to 50°C]. The design of the temperature measuring device shall be such that it allows 3 in. [75 mm] or more immersion during operation.

4.3 Partial immersion liquid-in-glass thermometers (and possibly other types) shall have a permanent mark to which the device must be immersed without applying a correction factor.

4.4 *Reference Temperature Measuring Device*, shall be readable and accurate to  $\pm 0.5^\circ\text{F}$  [0.2°C] at the verification points in 5.1. A certificate or report that verifies the accuracy shall be available in the laboratory for review. Accuracy of liquid-in-glass reference temperature measuring devices shall be verified once. Verification of direct-reading resistance reference temperature measuring devices shall be performed every twelve months. The certificate or report shall provide documentation that the reference standard used in the verification is traceable to the National Institute of Standards and Technology (NIST).

### 5. Calibration of Temperature Measuring Device

5.1 Each temperature measuring device used for determining temperature of freshly mixed concrete shall be calibrated annually, or whenever there is a question of accuracy. This

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C09 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.60 on Testing Fresh Concrete.

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<sup>2</sup> Section on Safety Precautions, Manual of Aggregate and Concrete Testing, *Annual Book of ASTM Standards*, Vol 04.02.

<sup>3</sup> 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.

<sup>4</sup> Available from American Concrete Institute, Box 9094, Farmington Hills, MI 48333.

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