



## Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals<sup>1</sup>

This standard is issued under the fixed designation C 672/C 672M; 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.

### 1. Scope

1.1 This test method covers the determination of the resistance to scaling of a horizontal concrete surface exposed to freezing-and-thawing cycles in the presence of deicing chemicals. It is intended for use in evaluating this surface resistance qualitatively by visual examination.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. Within the text, the inch-pound 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.

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 143 Test Method for Slump of Hydraulic Cement Concrete<sup>2</sup>
- C 156 Test Method for Water Retention by Concrete Curing Materials<sup>2</sup>
- C 173 Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method<sup>2</sup>
- C 192/C 192M Practice for Making and Curing Concrete Test Specimens in the Laboratory<sup>2</sup>
- C 231 Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method<sup>2</sup>
- C 233 Test Method for Air-Entraining Admixtures for Concrete<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>3</sup>

### 3. Significance and Use

3.1 This test method can be used to evaluate the effect of

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.02.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 04.01.

mixture proportioning, surface treatment, curing, or other variables on resistance to scaling.

3.2 This test method is not intended to be used in determining the durability of aggregates or other ingredients of the concrete.

3.3 No relationship has been established between the frost immunity of specimens cut from hardened concrete and specimens prepared in the laboratory.

### 4. Apparatus

4.1 *Freezing Equipment*—A chest or room of sufficient size to hold the specimens and capable of lowering the temperature of the specimens to  $-18 \pm 3^\circ\text{C}$  [ $0 \pm 5^\circ\text{F}$ ] within 16 to 18 h and maintaining this temperature with a full load of specimens.

4.2 *Molds*, of the proper size for the test specimens to be used, and conforming to the requirements of Practice C 192.

4.3 *Tamping Rod*, conforming to the requirements of Test Method C 143.

4.4 *Small Tools*—Wood strike-off board, steel trowel, and moderately stiff bristle brush suitable for providing the desired texture of the test surface.

4.5 *Slump Cone*, conforming to the requirements of Test Method C 143 or Test Method C 231.

4.6 *Air Meter*, conforming to the requirements of Test Method C 173.

4.7 *Scales*, conforming to the requirements of Practice C 192.

4.8 *Concrete Mixer*, conforming to the requirements of Practice C 192.

### 5. Proportioning and Mixing

5.1 *Proportioning*—The air content, cement factor, slump, water-to-cement ratio, and other characteristics of the concrete and its ingredients shall be those appropriate for the purposes for which the tests are to be made. Concrete with the following characteristics has been found useful for the purposes for which this test method is generally used, such as evaluation of a surface treatment for prevention of scaling: (a) non-air-entrained; (b) cement content,  $335 \pm 5 \text{ kg/m}^3$  [ $565 \pm 10 \text{ lb/yd}^3$ ]; (c) slump,  $75 \pm 15 \text{ mm}$  [ $3 \pm 0.5 \text{ in.}$ ]; and (d) durable aggregate (Note 1) of 25-mm [1-in.] maximum size. If air-entrained concrete is to be used for comparative purposes, it shall have the same proportions as that with which it is being compared and the air content shall be  $6 \pm 1 \%$  (Note 2).