Designation: D5860 – 95 (Reapproved 2007)

Standard Test Method for Evaluation of the Effect of Water Repellent Treatments on Freeze-Thaw Resistance of Hydraulic Cement Mortar Specimens[1]

This standard is issued under the fixed designation D5860; 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.

1. Scope

1.1 This test method covers a procedure for determining the comparative effect of water repellent treatments on the freeze-thaw cycling of hydraulic cement mortar specimens.

1.2 This test method is designed to compare the effectiveness of water repellent treatments under conditions of freezing and thawing only. This test method is intended as a laboratory screening method for treatment selection and may not accurately reflect the performance of treated and untreated specimens in the field. This test method is not intended to duplicate field conditions.

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C109/C109M Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)

D1193 Specification for Reagent Water

D1475 Test Method For Density of Liquid Coatings, Inks, and Related Products

E145 Specification for Gravity-Convection and Forced-Ventilation Ovens

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *water repellent treatment, n*—a transparent penetrating sealer or surface-applied treatment formulated for the purpose of protecting porous substrates by reducing the penetration of liquid water.

4. Summary of Test Method

4.1 Mortar specimens are treated with or immersed in a water repellent material, removed, and allowed to cure. After air drying, the treated specimens are weighed then subjected to various cycles of freezing and thawing. Periodic weighing and observations are made to determine weight loss and deleterious effects such as spalling and cracking.

5. Apparatus

5.1 *Balance,* having a capacity of not less than 400 g and a sensitivity of 0.1 g.

5.2 *Corrosion-resistant Metal Pan,* that is, aluminum, for immersion of substrates.

5.3 *Weight per Litre (Gallon) Cup.*

5.4 *Freezing Chamber,* capable of maintaining −19.2± 1.4°C (−2.5 ± 2.5°F).

5.5 *Forced Draft Oven,* capable of maintaining 110 ± 5°C (230 ± 9°F).

5.6 *Stiff-nylon-bristled Brush.*

6. Test Materials

6.1 50-mm (2-in.) mortar cubes greater than 28-days old, and prepared in accordance with procedures outlined in Test Method C109/C109M, have been found suitable for this test method. These cubes should be brushed with a wire brush or lightly sand blasted to remove form oil or release agent before using. Five test specimens will be used for each treatment, and five untreated controls shall also be included for each test. All cubes should come from the same lot of material.

NOTE 1—Preferably, rather than make each cube individually, a large cake can be made. 25-mm (1-in.) should be cut off each face of the cake

[1] This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.47 on Concrete, Stone and Masonry Treatments.

Current edition approved July 1, 2007. Published July 2007. Originally approved in 1995. Last previous edition approved in 2002 as D5860 - 95 (2002). DOI: 10.1520/D5860-95R07.

[2] 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.