



Designation: D 6489 – 99

Standard Test Method for Determining the Water Absorption of Hardened Concrete Treated With a Water Repellent Coating¹

This standard is issued under the fixed designation D 6489; 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 provides a procedure for the determination of the water absorption by a core of concrete taken from a surface treated with a water repellent.

1.2 The intended use of the water repellent coating is to reduce the amount of water that absorbs into the substrate.

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:*

C 42 Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete²

D 1193 Specification for Reagent Water³

D 1763 Specification for Epoxy Resins⁴

D 3924 Specification for Standard Environment for Conditioning and Testing Paint, Varnish, Lacquer, and Related Materials⁵

E 145 Specification for Gravity Convection and Force Ventilation Ovens⁶

E 898 Test Method of Testing Top Loading, Direct Reading Laboratory Scales and Balances⁶

3. Summary of Test Method

3.1 The specimen is dried to a constant weight and the portions of the specimen not treated with the water repellent

are sealed with an impervious sealing material. The specimens are weighed and immersed in water. The specimens are removed from the water, weighed, and a percent water absorption is calculated.

4. Significance and Use

4.1 Researchers in the field of water repellent coatings have recognized the need for a standardized test for determining the performance of water repellents applied to structures in the field. Many coating manufacturer's supply warranties for their products based on maintaining a specific water repellency on concrete. This test method can be used to determine the effective water repellency of the coating by comparing its performance to a control uncoated specimen.

5. Apparatus and Materials

5.1 *Balance*, having a capacity of not less than 4000 g (8.81 lb) and a sensitivity of 0.1 g, (0.0002 lb) as tested in accordance with Test Method **E 898**.

5.2 *Hot Plate*, capable of at least 149°C (300°F).

5.3 *Metal Pan*, at least 20.3 cm long by 15.2 cm wide and 5.1 cm deep (8 in. long by 6 in. wide and 2 in. deep), suitable to melt the wax or mix the epoxy.

5.4 *Brush, Duck Tape*.

5.5 *Container*, suitable for holding the water to immerse the specimens.

5.6 *Forced Draft Oven*, Type IIA or IIB, as defined in Specification **E 145**.

5.7 *Reagent Water*, as defined by Type IV of Specification **D 1193**.

5.8 *Sealing Material*, having very low permeability to water. Sealing material must meet the requirements of Section 6.

NOTE 1—Sealing materials that in general meet the requirements that are defined in Specification **D 1763**, Type I, Grade 1, (two component epoxies, epichlorohydrin/Bisphenol A and polyamine + Bisphenol A) or waxes used in the investment casting industry. Paraffin waxes are not acceptable.

6. Sealing Material

6.1 Use hardened concrete specimens as described in 7.1.

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 Masonry Treatments.

Current edition approved Dec. 10, 1999. Published February 2000.

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

³ *Annual Book of ASTM Standards*, Vol 11.01.

⁴ *Annual Book of ASTM Standards*, Vol 08.01.

⁵ *Annual Book of ASTM Standards*, Vol 06.01.

⁶ *Annual Book of ASTM Standards*, Vol 14.04.