



## Water Absorption (Sorptivity) Testing of Concrete (ASTM C 1585) Standard Test Method for Measurement of Rate of Absorption of Water by Hydraulic-Cement Concretes

### What is Sorptivity of Concrete Testing?

This test is performed to determine the susceptibility of an unsaturated concrete to the penetration of water. It measures the rate of absorption of water and other liquids into unsaturated concrete through capillary suction.

### How is the sorptivity of water in concrete evaluated?

Molded cylinder specimens are cast from a concrete mixture and moist cured for 28 days (or in accordance with a project specification). A 2-inch (50-mm) slice is taken from the cylinder and placed into an evaporation chamber at 122 °F (50 °C) and 80% relative humidity for three days, then sealed in a container for a minimum of 15 days. The outside and top of the slice are then coated with epoxy before it is placed in water. The change in mass of the slice is measured over time.

### What are the concerns about water absorption on durability and serviceability?

The durability of concrete in aggressive environments depends largely on transport properties, which are influenced by the penetrability of the pore system. Since most concrete elements are not fully water-saturated, the initial transport of water or other liquids is largely due to absorption. The ingress of water by capillary suction can impact the rate of chemical ingress affecting service life and long-term durability.

### Where should I be concerned about water absorption in concrete?

Water absorption is of particular concern in applications where concrete will be exposed to aggressive environments; specifically, to chloride and sulphate ions.

### How is this standard used in the industry?

Water sorptivity is recognized as an important index of concrete durability and this method is often used to compare the rate of water ingress between different concrete mixtures. The method is also used to evaluate the effectiveness of water-repellent admixtures and surface treatments, such as sealers, under non-hydrostatic conditions.

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