

CASTinTACT®

Concrete Tactile Warning Panels

Water Absorption

ASTM C 140 Water Absorption

One of the most important properties of a good quality concrete is low permeability, especially one resistant to freezing and thawing. A concrete with low permeability resists ingress of water and is not as susceptible to freezing and thawing. Water enters pores in the cement paste and even in the aggregate.

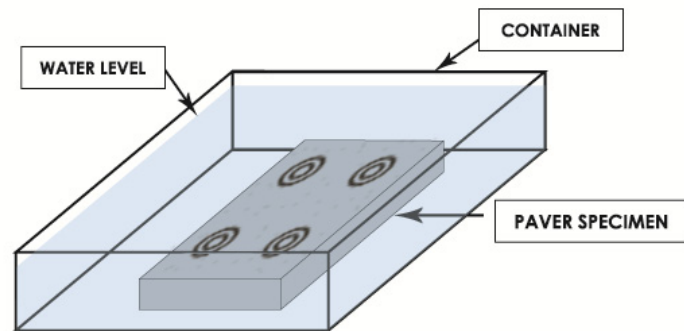
Absorption

For concrete pavers, the test procedure involves drying a specimen to a constant weight, weighing it, immersing it in water for specified amount of time, and weighing it again. The increase in weight as a percentage of the original weight is expressed as its absorption (in percent). The average absorption of the test samples shall not be greater than 5% with no individual unit greater than 7%.

Permeability

Permeability of concrete differs from absorption. Permeability relates to the size of the pores, their distribution and most importantly their continuity. As a result, permeability is not necessarily directly related to absorption. It has been related to water cement (w/c) ratio of concrete. Water cement ratio is the measure of the amount of water divided by the cement in a mix.

For concrete pavers to meet the freeze-thaw requirements they need to be high quality. This is reflected through low absorption, low permeability, and high density. In addition, these properties arise from high performance concrete mixes that incorporate low w/c ratios.



Water Absorption Test

Absorption Results (28-Days)

Specimen	Absorption (lbs./cu.ft.)	Absorption (%)	Moisture Content (%)	Oven Dry Density (lbs/cu. Ft)
1	6.11	4.16	n/a	146.70
2	6.40	4.37	n/a	146.50
3	6.64	4.53	n/a	146.60
Average	6.38	4.35	n/a	146.60