



Vapourproofing Concrete. Strengthening Foundations.

MOXIE SHIELD 1800 ADMIXTURE TECHNICAL BULLETIN - #18-105



Michael Kelley
R&D Engineer

Have more questions?
Please contact our
technical experts at
tech@moxieshield.com
or call 916.251.0827

WVT TESTING

WATER VAPOR TRANSMISSION TESTING

The Portland Cement Association, Design and Control of Concrete Mixtures, publication states that it can take several months of air drying in consistently dry weather before new concrete can reach a level of 80% relative humidity, or less, which will not affect the application of flooring materials. Hydration in concrete stops when the internal relative humidity is reduced to 80% or less. Until concrete reaches an internal relative humidity below this percentage the outflow of moisture transmission will cause coatings, coverings, paint and flooring materials to fail.

Moxie 1800 Admixture accelerates the process of concrete drying by capturing excess moisture and chemically reacting the moisture with the Portland cement hydration by-product, calcium hydroxide.

Moxie 1800 Admixture initially converts the free batch water and the calcium hydroxides into a colloidal gel state. In the interim period, the colloidal gels by their chemical nature do not allow any ion exchange and prevent water vapor transmission. The chemical process of this colloidal gel, when complete, converts the water and soluble calcium hydroxides into permanent, insoluble, calcium silicates.

Moxie recommends using the guidance of ASTM E1907 Standard Practices for Determining Moisture-Related Acceptability of Concrete Floors to Receive Moisture-Sensitive Finishes which describes the method of capturing moisture emission of the concrete at building operating conditions and recording the relative humidity of the captured and conditioned air. This is done with impermeable plastic sheeting and relative humidity transducers.

The ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride is not an applicable test method to evaluate the moisture emission rate of concrete containing Moxie 1800 Admixture. This calcium chloride test will forcefully remove the water from approximately the top 1" of the Moxie colloidal gel structure, making that layer void of approximately fifty percent of the water necessary for the chemical process of Moxie 1800 Admixture. This test method measures total moisture and cannot differentiate between free moisture emission from the concrete versus moisture which would have been gelled and used in the Moxie chemistry. Therefore, this test is not valid in the early stages of the chemical process where Moxie 1800 Admixture has been used and will yield erroneous results.

The ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes method also does not accurately indicate the moisture condition of the concrete surface of concrete where Moxie 1800 Admixture has been used. This method indicates internal relative humidity at a specified depth in the concrete with the assumption that the moisture gradient will eventually equilibrate after impermeable flooring materials have been installed. Since concrete containing Moxie technology is impermeable, there is little to no moisture gradient from top to bottom of the concrete, making the ASTM F2170 in situ probe method not applicable for concrete containing Moxie 1800 Admixture.