



## Moisture Testing for Concrete

When drying concrete after a water loss, it is important to measure and monitor the moisture content of the concrete in two phases. First during the drying phase and then again after the drying process has been complete. This will provide valuable knowledge of how the drying process is progressing in bringing the moisture content back to its pre-loss condition. It also provides information to help determine what mitigation, if any, will be required before reinstalling a floor covering.

In order to measure and monitor the moisture content in a meaningful way, you need to have an understanding of the different test methods, the meaning of their results, and how they relate to the restoration industry compared to the flooring industry. Having this understanding is important, as the testing methods designed for the flooring industry are designed to test the process of newly poured concrete and establish when it is dry enough to receive a floor coating or covering. This is different from the restoration industry, as the goal is to dry the concrete back to the pre-loss condition.

The most commonly specified tests for measuring the moisture in concrete in the United States are the Equilibrium Relative Humidity as per ASTM F2170, Calcium Chloride vapor emission testing as per ASTM F1869, and non-destructive Electrical Impedance measurement as per ASTM F2659. F2170 and F1869 are both considered quantitative tests, where F2659 is considered a qualitative. Most flooring manufacturers will require that either the F2170 or F1869 are completed before a floor can be installed. Both tests measure the water vapor, not the moisture content in concrete and require that the building be in service condition for 48 hours before the testing can begin. This is required as changing environmental conditions will affect the relationship the water vapor and the water.

Most of the tests developed for the flooring industry are designed to measure the construction moisture within the concrete and not the moisture from intrusion or other external sources. Using the results from a variety of test methods will help in distinguishing the different sources when inspecting concrete after water damage has occurred. A restorer needs to be able to identify background moisture which could either be from construction moisture still in the slab, or leaks in the building, or moisture still entering a slab from beneath, or from above if there are dew point issues.

The use of an electrical impedance device will aid the restorer in focusing on the changes in readings rather than the readings themselves as it gives instant and repeatable results to help map and monitor the moisture during the drying process. As drying progresses, the difference in readings should decrease and will help in determining when the drying is complete. The mapping of these readings will indicate where to test further once the building is back to a in-service condition, using either Relative Humidity testing or Vapor Emission testing.

It is important to note that Relative Humidity testing per F2170, when used as a stand-alone test, is prone to giving false positive readings and at time false negative readings due to the quality of the concrete. False positive readings can occur due to the concrete having less air movement when it is of a high quality, and false negative reading due to uncured materials such as slats lowering the equilibrium relative humidity. If the results of the non-destructive impedance test and the relative humidity test do not concur, it is possible that further testing may be needed. Using a combination of ambient testing, surface concrete temperature testing, non-destructive impedance testing, and calcium chloride testing (to be used when the others do not concur) should provide all the information need to determine the moisture condition of the slab.

In closing, it is vital that you selected an experienced restoration contractor to mitigate any water damage that your property may experience. They will use the proper techniques and methods to dry the structure, and make sure the slab is ready for a floorcovering. Until next time my friends, be prepared and stay safe.

# October 2016

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4 SAHLA Luncheon SAMA Lunch	5	6 ACA Seminar	7	8
9	10	11 SACA Luncheon CAI Luncheon	12 AAFAME Luncheon	13 IREM Luncheon	14 SABOMA Clay Shoot	15
16	17	18	19 IIASA Golf Tournament	20 IFMA Golf Austin BOMA	21	22
23 -----Region #3	14 -----Super-----	25 IWSA Luncheon --Conference---	26	27 -----FIWT---	28 --2016-----	29 ---Convention---
30	31					

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## Events

October 4: SAHLA Luncheon  
 October 4: SAMA Luncheon  
 October 6: ACA Luncheon  
 October 11: SACA Luncheon  
 October 11: CAI Luncheon  
 October 12: AAFAME Luncheon  
 October 13: IREM Luncheon  
 October 14: SA BOMA Clay Shoot  
 October 19: IIASA Golf  
 October 20: Austin BOMA  
 October 23-25: Region 3 Super Conference  
 October 25: IWSA Luncheon  
 October 27-29: FIWT 2016 Convention

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