FLOORING MOISTURE 101

Understanding Risks, Testing Standards & Effective Solutions

Why Test?

Excessive moisture poses serious risks in the floor covering industry. If not properly addressed, it can lead to major failures. The only way to detect it is through proper testing, using recognized methods.

Modern fast-track construction often limits the curing time of concrete, leading to compromised substrates. Excessive moisture can result in:

- **Adhesive failure**
- **Flooring cupping and buckling**
- **Flooring delamination**
- **Mold and mildew**

TESTING STANDARDS

The ASTM **(American Society for Testing Materials)** is the industry standard.

- **ASTM F1869-10** covers standards for calcium chloride testing
- **ASTM F2170-09** covers standards for probe (In-Situ) testing

Moisture Barrier

A concrete vapor barrier is a polyethylene sheet placed over the sub-grade before pouring the concrete slab. It prevents ground moisture from migrating up through the slab and into flooring systems.

Many moisture-related issues in interior concrete floors can be minimized—or even eliminated—by installing a vapor barrier.

- **A properly installed moisture barrier beneath the slab is the most effective defense against moisture-related flooring failures.**

SOLUTIONS	PROS	CONS	EXAMPLE
SOLIDS EPOXY 100% RH	• 100% Mitigation • One time application • Stays in place through flooring replacement	• 2-Part • 8-12 Hr Dry Time • Must bead blast for profile • Cost	 **Example:** Uzin PE-460
MOISTURE MEMBRANE 100% RH	• 100% Mitigation • Fast Installation • Works with multiple flooring products	• One time use • Remove when flooring is replaced	 **Example:** Traxxshield-100
TROWEL ON LIQUID 100% RH	• 100% Mitigation • No testing required • Easy application	• 8 Hr Dry Time	 **Example:** Taylor Sahara
ROLL ON LIQUID APPLIED 100% RH	• Easy application • Fast Drying	• Limited moisture remediation (95-97%) • Must Moisture Test	 **Example:** Taylor Zephyr 95% (2 coats)

Note: This document is intended for discussion purpose only.
Always refer to complete manufacturer installation information.

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Moisture & pH

Common Moisture Testing

RELATIVE HUMIDITY (RH)

Relative humidity in concrete slabs is an indication of the moisture content in the concrete slab. The most common reason for high moisture levels in a concrete slab is fast track building. There is not enough time allowed for the moisture to dissipate from the slab. It can take months to come down to an acceptable level.

VAPOR EMISSION (MVER)

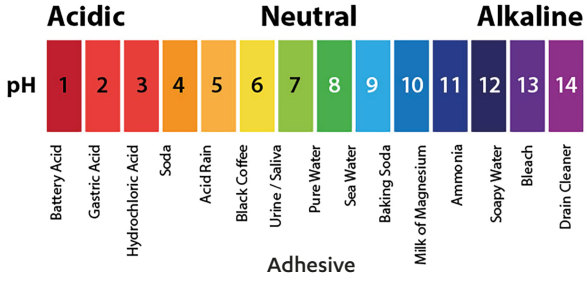
The anhydrous calcium chloride test was developed as a qualitative evaluation of floor moisture condition and became the industry standard in the 1960's, since then thousands of MVER tests are run each year in the U.S. In the past decade more and more skepticism concerning the accuracy of this test has been called into question.

HYDROSTATIC PRESSURE

Hydrostatic pressure is the result of the water table being higher than the substrate surface. Water is forced up through any cracks.

HIGH *pH*

Moisture traveling through the substrate can, and often does, bring Alkali with it. Alkali has high PH. High PH can degrade adhesive resulting in flooring failure. Most adhesives have a tolerance to PH between 6 and 9, most concrete when poured has a PH of 13.

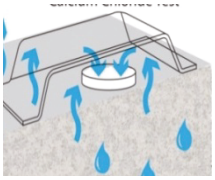


RH PROBES IN-SITU *(ASTM F2170-09)*

In-Situ Probes measure Relative Humidity. Relative Humidity is the actual amount of moisture in the air compared to the amount of moisture that the air could hold if saturated, expressed as percent. In concrete, you measure the relative humidity of a small volume of air at the bottom of a hole drilled into the concrete.

CALCIUM CHLORIDE *(ASTM F1869-10)*

The Calcium Chloride Moisture Test Kit measures the quantity of moisture passing through on and below grade concrete floors (lbs. of moisture over a 1,000 sq. ft. area during a 24 hour period).



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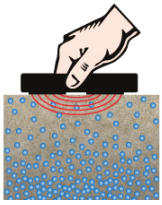

PIN METERS

Pin meters are generally used to test moisture content in wood. Use for wood flooring and wood substrates. Pin meters are generally either an indicator (light or buzzer) or digital read out.

RH PROBES IN-SITU *(ASTM F2170-09)*

Tape an 2' x 2' plastic sheet to the cleaned concrete substrate. Leave in place for 24 hs. Dark concrete or visible moisture droplets is an indication of a moisture problem.

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