

# Why the In-situ Probe Test is important



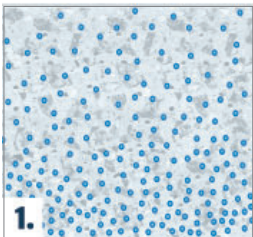
Concrete slabs are an integral part of a building. Excess moisture in a slab will over time be released and can affect the entire building including in particular floor coverings.

Moisture testing in concrete slabs is conducted to determine, whether or not floor coverings, sealers or epoxies can be applied without future problems. The question is, how can we predict what happens in a slab once the floor covering has been installed. See graph 1 and 2 showing the difference in moisture distribution between an uncovered and a covered slab.

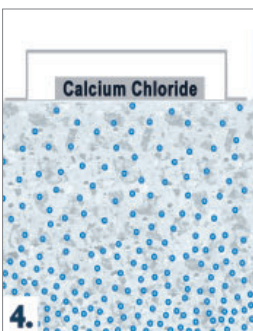
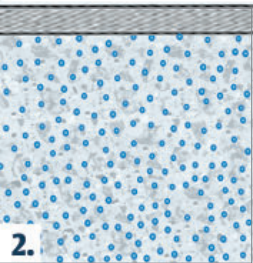
A slab is considered dry:

- When the free water is bound.
- An equilibrium with the surrounding air has been reached.
- No other moisture source (e.g. ground water) is available. Concrete is a hygroscopic material, which will absorb water like a sponge.

**Moisture Distribution without floor covering**



**Moisture Distribution with floor covering**



**The task is to determine, when a slab is dry enough to install floor coverings without future problems.**

**1.** Graph shows the moisture distribution in an uncovered slab. This slab is still drying, losing moisture through the surface. As time goes on, the drier surface will continuously pull moisture from the bottom up to evaporate through the surface. Until the slab is totally dry, the bottom will always have a higher moisture level than the top of the slab.

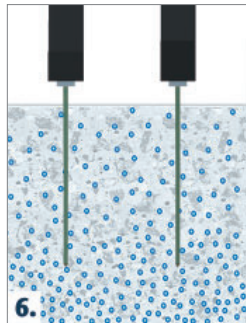
**2.** Graph shows, once the surface is covered or sealed, all moisture inside the slab is trapped and will slowly distribute itself evenly throughout the slab. The result will be less moisture at the bottom more moisture at the top. The increase in moisture at the top of the slab could damage the floor covering.

**3.** Graph shows in-situ RH concrete moisture test. It has been found, that at a 40% slab thickness the moisture distribution is about the same, when the slab is not covered as when the slab is covered. For slabs not on grade this is at 20% slab thickness. For that reason, the most reliable test for concrete moisture is conducted by measuring moisture at 40% (20%) of the slab thickness. The correct measuring depth is important for obtaining reliable results.

**4.** Graph shows the Calcium Chloride test kit. The Calcium Chloride test does not measure moisture in the core of the slab, it only takes into consideration the top section, which is not representative for the moisture of the entire slab. Also, the evaporation which is measured by the Calcium Chloride test depends on the ambient humidity around the slab. On humid days a wet floor evaporates less than on a dry day!

**5. 6.** Graph shows handheld pin and pinless meters can only be used to show high and low moisture areas, not to determine whether or not a floor covering can be installed.

- 5.) Pinless meters only measure at the most 1" down into the slab, which is not deep enough to catch the moisture, which can cause trouble once the floor is covered.
- 6.) Pin meters can measure all the way through the slab (we offer 7" long pins), but the value the meter shows is not a percent moisture value. Different chemicals in the slabs affect the measured values. Meters are not calibrated for individual slabs.



ASTM standard F2659 states, that handheld meters can only be used to compare moisture levels, but do not produce absolute moisture values.

The safest course of action for the floor installer is to check with the manufacturer of the floorcovering, adhesive and epoxy. The installation guidelines usually contain what kind of concrete test is required and what the permissible moisture range is to install the floor covering. Following those guide lines will guarantee the manufacturer's warranty will be valid.

# RH Packages



## Lignomat's RH Packages:

- Concrete Package with Ligno-Tec RH meter
- Flooring Package with Ligno-DuoTec BW meter
- Inspector Package with Ligno-VersaTec and E12

Add more RH Probes and more sleeves at the time of purchase to get the package discount.

All in one package: V2-KM: With the **Ligno-VersaTec** you can choose the right measuring mode and the right accessories for the job on hand. The Ligno-VersaTecs pinless mode allows instant concrete measurements to aid in selecting the best RH Probe placement. Complies with ASTM F2659.

This meter comes with dual-depth measuring capabilities for all wood and concrete settings.

**retrievable - reusable - economical**

# Integrated RH Technology

Lignomat's RH BluePeg probes are designed to comply with the latest ASTM F2170 standard. However, the stand-alone RH BluePeg probes with universal 3.5mm stereo connectors allow easy integration with other Lignomat's measuring technologies.

1. Handheld meters with RH Technology:
  - RH-only meter: Ligno-Tec RH
  - RH-pinless meter: Dual-depth Ligno-Duotec BW
  - RH-pinless- pin meter: Dual-depth Ligno-Versatec
2. On-site Data Loggers with RH Technology:
  - RH-only BL2: records RH in 30 s - 1day intervals.
  - RH and MC: records one RH and 3 wood moisture probes. Programmable for other materials.
3. Wireless transmitters in RH Technology:
  - Single RH transmitter
  - Single RH transmitter plus one MC probe

## With Lignomat you have a choice.

You can select the handheld meter, which best fits your needs. It could be the RH meter only, because you do not need to measure wood. It could be the Ligno-VersaTec, which can be used as pinless meter and pin meter with one of Lignomats electrodes.

- Data logger BL2 stores RH/T readings. To download readings the BL2 needs to be connected to a PC.
- The wireless transmitters are automatically up-dating measurements at an on-site PC or can be remotely accessed from any PC.

## Summary: Measuring Moisture in Concrete: pin - pinless - in-situ

Meter/Logger	◀ RH in-situ test conforms with ASTM F2170	◀ pinless, dual-depth conforms with ASTM F2659	◀ pin for instant evaluation
Ligno-Tec RH	x		
Ligno-DuoTec BW	x	x	
Ligno-VersaTec	x	x	x
mini-Ligno S/DC			x
mini-Ligno DX/C			x
Lignometer K			x
Data Logger BL2	x		
MC Tracker BL2	x		x
Wireless MC/RH	x		x