

New Moisture Meters Speed Construction and Increase Project Quality

By John Bogart | Sunday, June 14, 2020

[Tools](#), [Markets](#), [innovation](#)



A crucial part of managing any large-scale construction project is staging the work as efficiently as possible so the crew and any subcontractors remain busy while maintaining building quality. However, when moisture or water is part of the equation, decisions about proceeding to next steps, waiting for materials to dry or cure, or even ensuring the ideal ratio of water in adhesives and slurry mixes can be even more critical. The risk can be quality issues, costly re-work, mold, shrinking/expansion/warping of materials and other construction matters.

On most construction sites, there can be uncertainty about moisture levels for a variety of reasons. Building materials can be unintentionally exposed to rain, snow or humidity during framing; unexpected events such as plumbing leaks can occur; drying and curing times of adhesives, mastics, concrete or other materials can be difficult to ascertain; and even the moisture content in raw materials such as powders or lumber may be unclear.

Although the construction industry has access to moisture meters, to some extent, these tools typically require calibration, sampling and time. In addition, they are not very flexible in measuring a variety of materials in various forms—such as wet, powder or solid—and certainly are not portable enough to be used on jobsites.



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However, a new category of portable, handheld, instant moisture measurement devices are now available for construction workers that can be used on a wide range of materials with no special training.

These “point-and-measure” units can be used at the jobsite wherever moisture is a problem or a specified moisture content needs to be known to proceed with work, whether that involves sand, aggregate, concrete mixes, adhesives, wood frame construction, drywall or other materials. This new tool is helping expedite project completion and improve building quality for as little as \$20 a day when the equipment is leased.

SIMPLIFYING MOISTURE MEASUREMENT

Although traditional laboratory and online-based moisture measurement techniques are useful in the right settings, they have lacked the simplicity and flexibility required for frequent spot checks on a jobsite.

One common test is "loss on drying," which measures the total material weight change after drying. However, such tests typically require a sample to be prepared and brought to a lab. The test takes a minimum of 15 minutes up to several hours to perform.

Because such traditional moisture tests are too slow, laborious and alter or destroy the sample, they are not practical for construction sites. Instead what is needed is a fast, easy “point-and-measure” method to determine moisture content.

So, industry innovators have developed a simplified approach with testing equipment that uses Near-Infrared (NIR) light, a highly accurate, non-contact secondary measurement method that can deliver immediate, laboratory quality moisture readings.

NIR moisture meters allow very accurate instant measurement of solids, slurries and liquids without contact or sample preparation in portable handheld models.

Once the meter has been calibrated against lab or production standards, the calibrations are stored in the device so no calibration is required in the field. The calibrations are stored in different “channels” in the unit, each dedicated to a specific type of building material. The user selects the proper channel and the measurement is instantly displayed.

NIR moisture meters follow the principle that water absorbs certain wavelengths of light. The meter reflects light off the sample, measures how much light has been absorbed and the result is automatically converted into a moisture content reading.

Construction contractors can use the NIR meters on anything where measuring surface moisture is important.

At a construction site, for example, an NIR meter could be used to instantly check the moisture level of bulk “dry” goods such as sand or aggregate on receipt from suppliers. It could also be used to spot check the moisture content of materials mixed with water. The same approach could help to speed the installation of flooring or tile while ensuring quality control.


An NIR meter can determine if mastic or adhesive has the correct moisture content to properly bond floor, wall, and ceiling tiles so creep, shrinkage, buckling or grout problems do not become an issue.


The meters can also be helpful when finishing a construction project. For example, when painting a wall, an NIR meter can be used to ensure that the paint is dry before adding a second coat.

When measuring moisture content inside a variety of building materials such as lumber, concrete, mortar, gypsum board or OSB is necessary, portable electronic, contact gauge testers are also available.

Handheld contact gauges can measure the moisture inside many kinds of samples at superficial or deeper levels just seconds after contact with the material.

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