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Why Measure Moisture in Floors?

Today, most flooring materials employ water-based adhesives, which are much more likely to fail from moisture than the older, less sensitive, solvent-based adhesives. Moisture also causes laminates to fail, tile to lift, and hardwood floors to warp or crack. A newly poured concrete floor slab is usually the slowest-drying element of a building. Rain during construction can also trap moisture in subfloor and framing materials. Protimeter instruments deliver accurate, rapid measurement–essential to a timely and successful floor installation.

Flooring
Protimeter Applications

Protimeter is a Protimeter product.
Protimeter has joined other GE high-technology sensing businesses under a new name–
GE Industrial, Sensing.

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Why GE Instruments Work Better For Flooring

From rapid detection and evaluation to precision equilibrium relative humidity, there's a Protimeter instrument for every flooring moisture measurement. Protimeter hygrometers employ interchangeable Hygrostick™ probes, which can be placed in various test locations and can be rapidly attached for multiple, sequential Equilibrium Relative Humidity (ERH) readings from a single instrument. The Moisture Measurement System Plus (MMS Plus) incorporates hygrometry, pin, and pinless measurement methods for rapid evaluation, and accurate, in situ humidity measurement from the same instrument. The Hygromaster™ is an accurate, compact hygrometer at lower cost, but with the same, interchangeable Hygrosticks. Surveymaster™ incorporates both pin and radio frequency for rapid evaluation and measurement. The Mini and Timbermaster™ Mini offer pin-type measurement alone.

Wood is a less variable structure than concrete and, consequently, lends itself to moisture measurement with electrical conductivity. Mini, Surveymaster, Timbermaster and MMS Plus, with pin-type moisture measurement, give instant, accurate readings in wood. For further precision, these values can be adjusted to various species of wood. However, the base calibration alone is often sufficient. Concrete subfloors require RH measurement in a controlled area like the Protimeter surface humidity box, or within a humidity sleeve containing a Hygrostick, ASTM F2170-02. Since most contractors install flooring on both wood and concrete subfloors, it may be best to use a meter that measures moisture in both materials.

The New Standard for Moisture in Concrete Floors

Rapid tests in concrete with Protimeter pin-type resistance or non-invasive radio frequency moisture instruments should always be backed up with an ASTM-approved test method to ensure success and reduce liability. One ASTM method is the calcium chloride vapor emission test, where, surface evaporation is measured. But surface results often vary due to temperature and humidity conditions within the building: the warmer and dryer the atmosphere, the higher the evaporation rate and perceived moisture level in the concrete slab.

ASTM F2170-02 is the new test method for equilibrium relative humidity directly in concrete slabs. Protimeter pioneered this more accurate method, which includes drilling holes in the concrete, inserting a humidity sleeve and measuring the equilibrium humidity in the concrete. If excessive moisture is found, one simply replaces the sleeve cap for future retesting. This method permits normal construction without disturbing the test surface.

A small hole is drilled in the concrete. Next, a humidity sleeve is inserted and capped flush with the floor. The relative humidity of the air in the test hole is now at the same moisture level as the concrete around it. Flooring product manufacturers normally recommend RH readings between 75% and 85% depending on the permeability of the product being installed. See ASTM F2170-02 for exact test procedure.

How Moisture is Identified and Measured in Floors

Search
For rapid moisture detection near the surface prior to more conclusive tests:

- Non-invasive pinless radio frequency finds moisture up to 3/4 in (19 mm) below surfaces
- Not adversely affected by surface moisture or condensation
- Discovers and maps out failures beneath existing floor coverings like tile, vinyl and wood

Surveymaster

Aquant™

MMS Plus

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Measure
For rapid moisture measurement in wood products and common building materials

- Pin-type probes measure moisture content of wood and Wood Moisture Equivalent (WME) value in other flooring materials
- Insulated probes and hammer probe assess moisture at user-determined depths


Surveymaster


Mini


Timbermaster
Timbermaster Mini


MMS Plus

Hygrometry
A highly accurate method of testing to ASTM specifications

- Measures ambient relative humidity, temperature and dew point
- Modular, replaceable Hygrostick™ probe can be left in place at multiple locations
- Measures in-situ internal equilibrium relative humidity of concrete to ASTM F-2170-02
- Monitors buildings for adequate ventilation affecting indoor air quality, detect condensation


Hygromaster
Floor Kit

HygroHawk™


MMS Plus

Audit Your Efforts with Data logging

HygroHawk permits moisture readings, including time and date stamp, to be captured and uploaded to a Windows-based PC through a standard RS232 port.

Accessories

Surface Humidity Box–BLD4711
The surface humidity box method is the current British standard test for concrete floors. This method measures at the surface, and is useful when it is not appropriate to drill. Used with HygroHawk, Hygromaster and MMS Plus instruments.

Humidity Sleeves–BLD5020
(100, 50, and 20 packs available)
Humidity sleeves are inserted into a drilled 4.7 in (12 mm) hole in concrete. A Hygrostick™ is placed inside the sleeve and is capped. Readings from multiple sleeves can be done with a single instrument. Used with HygroHawk, Hygromaster, and MMS Plus instruments. Measures moisture to a depth of 1.38 in (35 mm). Weight 3.25 lbs.

Hammer Electrode–BLD5055
Measures moisture to a depth of 1.38 in (35 mm). Weight 3.25 lbs.

Hygrostick–BLD4750C
Standard five pack four point calibration. Traceable calibration certificate available.

Hygrostick Extension Lead–BLD5802
Enables the user to take RH/temperature readings easily in materials and inaccessible areas.

Subfloor Type	Rapid Test	ASTM Humidity Test
Concrete	Surveymaster, Aquant and MMS Plus	MMS Plus, Hygromaster floor kit and HygroHawk
Wood	Surveymaster, Mini, Timbermaster Mini and MMS Plus	N/A
Both	Surveymaster and MMS Plus	MMS Plus

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	MMS Plus	Timbermaster Mini	Surveymaster	Hygromaster Floor Kit	HygroHawk	Mini	Aquant
Product Code	BLD5812	BLD5604	BLD5360	BLD4704	BLD7702	BLD2000	BLD5760
Included as Standard	Instrument, 5 in (127 mm) wall probes, heavy-duty pin lead, Hygrostick probe surface temperature sensor, Hygrostick extension lead, calibration check device, instructions, nylon pouch, data download cable and software	Instrument, extension lead, wood calibration chart, calibration check device, spare pins, instructions and nylon pouch	Instrument, heavy-duty pin extension lead, deep wall probes, wood calibration chart, calibration check device, spare pins, instructions and nylon pouch	Instrument, Hygrostick, instructions and nylon pouch, 20 humidity sleeves and extension lead	Instrument, pouch, Humistick, logging software, data cable and instructions	Instrument, extension lead, wood calibration chart, spare pins, instructions and nylon pouch	Instrument, Velcro pouch with belt loop and instructions
Gross Weight	10.58 oz (300 g)	5.3 oz (150 g)	4 oz (100 g)	5.3 oz (150 g)	5.3 oz (150 g)	5.3 oz (150 g)	5.3 oz (150 g)
Dimensions (l x w x h)	7 x 2.75 x 1.9 in (180 x 70 x 49 mm)	7 x 2 x 1 in (180 x 49 x 28 mm)	6 x 1 x 2 in (175 x 30 x 48 mm)	7 x 1 x 1.9 in (180 x 28 x 49 mm)	7 x 1 x 1.9 in (180 x 28 x 49 mm)	7 x 1 x 1.9 in (180 x 28 x 49 mm)	6 x 1 x 2 in (175 x 30 x 48 mm)
Maximum Needle Depth	0.4 in (10 mm)	0.4 in (10 mm)	0.4 in (10 mm)	N/A	N/A	0.4 in (10 mm)	N/A
Display	LCD	LCD	LED and LCD	LCD	LCD	LED	LED and LCD
Batteries (included)	2 AA	2 AA	(1) 9 volt	2 AA	2 AA	(1) 9 volt	(1) 9 volt
Measurement Range							
Pin (% WME)	6% to 99%	7% to 99%	6% to 98%	N/A	N/A	6% to 90%	N/A
Non-Invasive (RF)	0 to 1,000 (rel.) up to 3/4 in (19 mm) deep	N/A	0 to 999 (relative) up to 3/4 in (19 mm) deep	N/A	N/A	N/A	0 to 999 (rel.) up to 3/4 in (19 mm) deep
Humistick Data Nominal	0% to 100% RH, 32°F to 122°F (0°C to 50°C)	N/A	N/A	N/A	10% to 90% RH ±2% RH See specifications on datasheet	N/A	N/A
Temperature Probe Range Nominal	15°F to 120°F (-10°C to 50°C)	15°F to 120°F (-10°C to 50°C)	N/A	15°F to 120°F (-10°C to 50°C)	15°F to 120°F (-10°C to 50°C)	N/A	N/A
Hygrostick Data Nominal 20% to 100% RH, 0°C to 50°C (32°F to 122°F)	±2.5% RH	N/A	N/A	±2.5% RH	±2.5% RH	N/A	N/A
30% to 40% RH 41% to 98%	±1.75% RH	N/A	N/A	±1.75% RH	±1.75% RH	N/A	N/A
-18°C to 50°C (0.5°F to 122°F)	0.6°F (0.3°C)	–	–	0.6°F (0.3°C)	0.6°F (0.3°C)	–	–

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