

Let's Talk Tech Moisture Detection

Source: Installation Specialist Magazine - Thanks to Tim McCool - Former NWFA Director of Technical Services

So many of the phone calls I deal with tend to be related to moisture problems. Callers phone with situations that occur after the flooring has been installed and/or finished, and they hope I can come up with a magic solution for the moisture problem.

Moisture detection and prevention should be our ultimate goal. Having the proper tools is the first step. Moisture meters and thermal hygrometers are the tools of choice.

No matter how old or new the site is, every job needs to be checked thoroughly, inside, outside and under the site if possible. Checking drainage, gutters, and grading of the soil away from the sites foundation. If there is a crawl space, check for proper ventilation and ground cover. (6 mil. Polyethylene)

New construction sites have moisture introduced in many different ways and times. Examples of this are:

- Concrete foundations one cubic foot= 3 pints of water per cubic foot after its cured.
- Concrete slab 4" thick, size 25 x 40 (1000sf.) = 250 gallons of water or a quart per square foot.
- Wall texture (heavy) = 8 ounces of water per square foot (16 square feet per gallon)

Moisture is also introduced into the building through paint, taping compounds, spills, high humidity and rain. Most moisture is allowed to evaporate, if adequate ventilation is provided. A small percentage of moisture is absorbed into the sub floors, shingling, studs and joists. Plywood sheathing allows the moisture to pass through the sheathing, while moisture is contained with oriented strand board or wafer board.

One of the largest problems we have with today's new buildings is the need to be airtight and energy efficient, which is great for the heating bill, but keeps moisture in the building for a longer period of time. What might seem like a dry house to one person is far too wet for the wood flooring installer.

The wood flooring installer needs to be prepared - have your moisture meter and thermal hygrometer at every job. Check the wood flooring, sub-flooring, humidity and temperature. Make sure all moisture levels are correct and cross-reference to the chart in your NWFA

manual, Behavior of Flooring/Equilibrium Moisture Content.

Reference Tips: Humidity recommendation range from 30% - 50% in the building, temperature recommendations range from 60° F - 80° F in the building. If you stay within the recommendation, the amount of expansion and contraction is limited.

Temp. (F)	Relative Humidity Percent																			
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	98
30	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.9
40	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.9
50	1.4	2.6	3.6	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.3	11.2	12.3	13.4	14.8	16.4	18.4	20.9	24.3	26.9
60	1.3	2.5	3.6	4.6	5.4	6.2	7.0	7.8	8.6	9.4	10.2	11.1	12.1	13.3	14.6	16.2	18.2	20.7	24.1	26.8
70	1.3	2.5	3.5	4.5	5.4	6.2	6.9	7.7	8.5	9.2	10.1	11.0	12.0	13.1	14.4	16.0	17.9	20.5	23.9	26.6
80	1.3	2.4	3.5	4.4	5.3	6.1	6.8	7.6	8.3	9.1	9.9	10.8	11.7	12.9	14.2	15.7	17.7	20.2	23.6	26.3
90	1.2	2.3	3.4	4.3	5.1	5.9	6.7	7.4	8.1	8.9	9.7	10.5	11.5	12.6	13.9	15.4	17.3	19.8	23.3	26.0
100	1.2	2.3	3.3	4.2	5.0	5.8	6.5	7.2	7.9	8.7	9.5	10.3	11.2	12.3	13.6	15.1	17.0	19.5	22.9	25.6

Chart from the U.S. Dept of Agriculture "Wood Handbook Wood as an Engineered Material"

If moisture content is too high in the sub flooring or humidity levels are too high, you may need to ventilate the area better or turn on the HVAC system. The building needs to be within normal living conditions before you bring the wood flooring in for acclimation.

Sub floor recommendation for moisture: Wood sub floor will range from 6% to 14% normal moisture depending on location in North America, with coastal areas being the higher percentages (11% - 14%)

Wood flooring recommendation for moisture: If the building is in normal living conditions and the wood sub floor is in recommended moisture range. Wood flooring needs to be acclimated for 4 to 5 days or more, depending on species and thickness of the flooring. Strip flooring should be no more than 4% difference that the sub floor moisture reading before installation. Plank flooring should be no more than 2% difference than the sub floor moisture reading before installation.