PEACHEY
HARDWOOD FLOORING
The Beauty of Nature. Perfected.

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BASICS OF HUMIDITY & YOUR NEW FLOOR

Humidity control is the single most important factor to ensuring long-term satisfaction with your floor

You've looked around for that perfect floor…species, grain, color, width, distressing, quality, price…all important factors when choosing a floor. You've decided on a floor and now you need to get it installed. There are a few very important questions to discuss with your installer and a few words of advice from your manufacturer that will ensure your lifelong satisfaction with the performance of your floor.

Hardwood flooring is still a living thing

Hardwood flooring captures all of the beauty of nature from when it was part of a living hardwood tree. After the tree is harvested and turned into flooring, it's still "living" each and every day. The vessels and fibers in a living tree carry nutrients to the tree to help it grow, but they also absorb and desorb moisture within your home after the lumber is turned into flooring. Hardwood flooring is unique in it's' beauty but also unique in how it is affected by moisture. Without adequate humidity control, hardwood flooring will likely grow and shrink in ways that could adversely affect the long-term beauty of your flooring.

Checking temperature and humidity levels before installation is critical

Most flooring will move along the width of the board with typically little expansion or contraction lengthwise or along the thickness of the board. Peachey Hardwood flooring is manufactured to strict NWFA (National Wood Flooring Association) standards. These standards prescribe milling tolerances for width of +-.005" for flooring up to 3 ¼" and +-.008" for flooring over 3 ¼". The moisture content standard is between 6% and 10% with a 5% allowance for pieces outside of that standard to a maximum of 12%.

The moisture content of Peachey Hardwood Flooring is carefully controlled throughout the process and it leaves our factory within NWFA tolerances. However, once the flooring is put on the truck for delivery, it is subjected to a host of various conditions that can adversely affect the moisture content. Hardwood flooring needs to be properly acclimated to the environment in which it is installed. The subfloor should be moisture checked by a professional and the level recorded. The moisture content of plank hardwood flooring and the subfloor should be *no more than 2 percentage points different.* If the subfloor moisture content is 10%, the flooring should be between 8 – 12%. If the moisture content is greater or less, the installer must resolve the difference prior to installation, typically through proper acclimation of the floor or by installing moisture barriers. Acclimation is not a matter of time but is a factor of matching the humidity levels between the subfloor and flooring using a properly calibrated moisture meter. Plank flooring also requires a felt paper moisture retarded to be installed between the flooring and the subfloor. In cases where the flooring is installed below grade or directly on concrete, engineered flooring is required to prevent moisture issues.

Proper humidity control throughout the seasons

The living environment in your home affects the performance of your floor. Hardwood tends to expand during periods of high humidity and shrink during periods of low humidity. In the warm, humid summer months, humidity levels are high and can be partially controlled with air conditioning. During the cold winter months, the heating

in our homes and the dry outside air tend to reduce humidity and cause wood to shrink. ***Humidity levels must be maintained between 35 – 55% and temperature between 60-80 degrees year round.***

What happens to hardwood flooring when humidity levels change

Let's take a typical example of 5" Red Oak plank floor that was installed at 8% average moisture content, 70 degree temperature and 50% relative humidity level in the home.

The "change coefficient" or degree of movement of Red Oak is .00369" per inch, per point of moisture content. If the temperature stays at 70 degrees but the relative humidity level in the home drops from 50% to 20%, the moisture content in the flooring drops from 9.2% to 4.5%...a 4.7 percentage point drop. The result?

4.7 percentage points X .00369 change coefficient = .017343

Multiply that by the width of the board = .017343 X 5 inches = .0867" or about 3/32" per board. Across a 16' wide room, that's a total of nearly 1 3/8" of potential movement.

Let's take another example.

The flooring is installed in a new home where the drywall is still wet, humidity is high and the air conditioning is not yet running. The relative humidity is close to 90% and the temperature is 85 degrees. The resulting moisture content of the floor if properly acclimated would be close to a whopping 20%. After the home is dry and winter comes, the temperature drops to 70 degrees and the unconditioned humidity level drops to 20%. The resulting moisture content of the flooring is now 4.5% with a change of 15.5 percentage points of moisture content. The math...

15.5 percentage points X .00369 change coefficient = .057195

Multiply that by the width of the board = .057195 X 5 inches = .2859" or a little over 1/4" per board. In the same 16' wide room as above, we're now up to over 4" of total movement.

Humidity control becomes even more critical with wider flooring. In our extreme example above, 8" plank flooring would move almost 1/2" per board and a total of 8" or one entire board width in the 16' room.

Wood species, HVAC systems, subfloor material and flooring width can all affect dimensional changes.

How to control humidity

High humidity can be controlled through air conditioning to some degree and if that isn't sufficient, a dehumidifier may need to be installed.

Low humidity can be controlled with a humidifier, typically mounted to a furnace in modern forced air homes. In larger homes, a steam humidification system may be required which adds steam humidity to the house regardless of whether the furnace is running or not.

For further information on installation and humidity, please consult our website. In addition, we have archived a more detailed NWFA technical article on Wood and Moisture that can be found under our FAQ section or here.

You can also contact one of our flooring experts in person or by phone at the address above.