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Wood floors and humidity in your home

Anyone who is looking at putting hardwood flooring into their home should have a basic understanding of how humidity affects wood flooring. Many times the problems that can arise when wood floors come in contact with water or water vapor can be prevented if the flooring contractor properly educates the homeowner. Unfortunately this information isn't always communicated to the homeowner leaving them feeling frustrated or even feeling like they've been given inferior products or poor craftsmanship. A simple explanation of how wood is affected by water and how to prevent this being a problem for your floor will greatly reduce the incidence of poor experiences.

First and foremost wood is hygroscopic. Webster defines hygroscopic as "absorbing or attracting moisture from the air" or "readily absorbing moisture, as from the atmosphere". So now you know that wood can easily absorb moisture from the air or its environment. That doesn't sound so bad until you realize that when wood absorbs moisture it will also change in size. This actually affects wood flooring when it dries out as well. To understand this from the manufacturing side of things imagine this. When the sawmill cuts lumber it is what we call "green" lumber meaning that it still retains a lot of the moisture that was traveling up the trunk of the tree to get water to the branches and leaves. This green lumber may have a moisture content of 30%. Now if you made flooring out of this green lumber that was 5" wide, when the pieces of flooring dried out below 30% the flooring would shrink in size. That is why flooring manufacturers dry the lumber down to 6% - 9% before making it into flooring. This is the same with all hardwood trades. Going from 30% down to 9% lumber will lose about 7% of its size. Now that I've put you to sleep with that info let's try to get back to the real world and understand how this affects the floor in your home.

Your floor will come in generally around 6% - 9% moisture content. It will need to acclimate (definition: become accustomed to a new climate or environment) to the interior conditions of your home to achieve equilibrium so that it does not shrink or swell as it adjusts to its new environment. This is why experienced flooring contractors will measure the moisture content prior to installing it and will also make sure that your home will have stable conditions (constant humidity and temperature) before installing the floor. If the floor is 9% moisture content and is installed into an environment that is 20% relative humidity the floor will begin to shrink in size and you'll see gaps between the rows. On the other hand if the floor is 6% and is installed into an environment that is 50% relative humidity it will begin to grow in size which will in turn make the floor "cup" or begin to exhibit a washboard appearance. This is a common unsightly occurrence that many homeowners experience with little understanding of what's

going on. This can be caused by contractors not doing their due diligence on testing moisture in the wood and in the home prior to installation but can also be caused by homeowners not maintaining stable interior moisture conditions in their home. Wood flooring has a comfort zone which is generally considered to be between 30% and 50% relative humidity and between 68 and 72 degrees. Thankfully these are conditions that humans also find comfortable. However you need to understand that this is why you cannot go on vacation and turn off the heat or air conditioning and assume your wood floor will not be affected.

Let me touch on a few things rules of thumb to consider when buying wood flooring. First off engineered products made from multiply ply's of hardwood with a hardwood veneer will be more stable than solid wood flooring in most conditions. Narrower widths are less affected than wider widths and lastly, some species are naturally more stable than others. For example a 6" wide solid Hickory floor will be more likely to move in a higher moisture environment than a 3 1/4" wide engineered red oak floor. Make sure when getting bids for your floor work that you ask the contractor if he will measure and document the moisture content of the flooring and sub-flooring and the interior relative humidity prior to installation. If he says it's not important then beware that he might not be taking all proper precautions to ensure your wood flooring installation will perform up to expectations. **Take care to make sure the interior conditions of your home will stay between 35% and 55% relative humidity.** This will require the use of a hygrometer which measures relative humidity which you can pick up at a local electronics store or on the internet.

Lastly, make sure you understand that if your home dries out in the wintertime expect to see cracks in the floor unless you take care to make sure the relative humidity stays stable. On the other hand if the relative humidity rises expect to see the floor begin to swell and possibly cup unless you can control or lower the humidity during the more humid season. This may sound technical or tedious but keep in mind two other factors when weighing the options. First off, keeping your home in these relative humidity levels will lower the cost of heating your home in the winter and additionally physicians will tell you that it is much healthier to breathe air with these levels of humidity than extremely dry or extremely wet conditions.

Also, be aware that certain species like Hickory will be affected more by changes in the environment causing excessive expansion, shrinking, or developing splits and cracks throughout your floor. That is why it is imperative to keep your home between 35% and 55% relative humidity.