

Wood moves

In the first paragraph of his book *Understanding Wood* (The Taunton Press, 1980), R. Bruce Hoadley wrote the most important words ever written for woodworkers: "Wood evolved as a functional tissue of plants rather than as a material designed to satisfy the needs of woodworkers." Everyone of us should regularly go back and read these words, but even if we do not, wood itself will remind us. In other words, we have to work around the nature of wood.

Wood's most persistent attribute is that it moves in response to changes in the relative humidity of the air that surrounds it. All woodworkers will, from time to time, be humbled by this fact. For that reason, a beginner woodworker just setting up shop should acquire not only a tablesaw, planes and chisels but also a thermometer, a humidity gauge, a moisture meter and a copy of *Understanding Wood*. While it is a good idea to read the entire book, you will want to photocopy and keep in the shop the graph on p. 69 that charts the amount of water in wood at a given relative humidity. Before beginning a project, determine the wood's current moisture content and then compare it to the extremes it will experience in its intended environment. It will save you a lot of grief.

Although I have been a professional woodworker for 28 years, I got my comeuppance a couple of years ago, the first winter after my chair-making school moved out of a drafty, poorly heated cinder-block industrial building into a new shop that was built, insulated and heated like a house. We use 50 Windsor chair seats a month for our classes and our own production. These are made of 1³/₄-in.-thick eastern white pine that we store in an unheated outbuilding. Roughly once a month we pull out enough planks to make up the seats needed, buck the planks into 22-in. lengths and glue them up into seat blanks.

In mid-January, after a six-week holiday break, we began our routine in preparation for the first class of the year. By the end of the day, we had gotten only as far as bucking the pine to length. We left the wood piled on the shop floor overnight. Upon arriving the next morning, we were stunned to see gaping splits in the ends of all of the pine. Eight hundred dollars of wood was ruined.

We immediately set out to discover what happened. The humid-

ity gauge read 28%. The new building was far drier than a normal house. The heat had come on in October and had been drying out the building for several months. In a home, people cook, shower and breathe regularly—processes that help raise the relative humidity. Here, there were only a few lungs at work five days a week, eight hours a day. The centrally heated shop was like a desert. When we checked Hoadley's chart, we found that the shop's relative humidity would dry wood to under 6%. We checked the wood with a moisture meter. After a rainy fall the wood was at 12%. When brought into this extreme environment, the wood began to dry so fast that it split. We had never had this problem because our old, uninsulated shop was so drafty that it never got this dry.

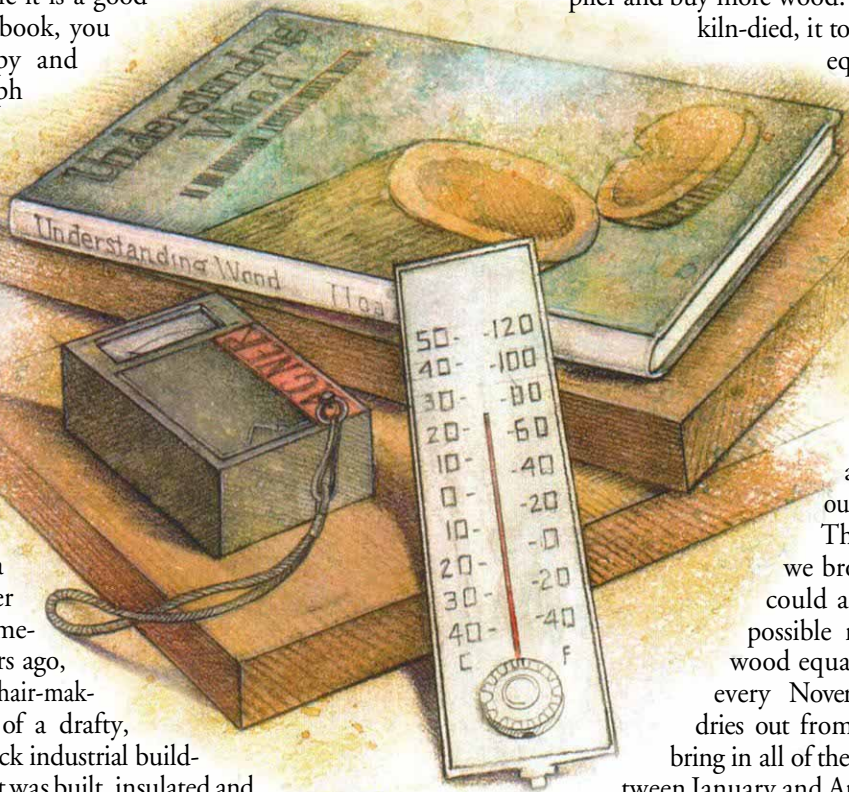
We were in a bind. The wood in the outbuilding had to come in and be made into seat blanks. We could not even go to our supplier and buy more wood. Although his wood had been kiln-died, it too was stored in his sheds and

equalized at the same 12% as ours. It would experience the same shock.

We brought in enough planks for several classes and piled them on the shop floor. We monitored them with a moisture meter until the planks got into the 8% range. A day or so before the class began, we were able to buck the wood without it splitting.

Through the rest of the winter we brought in all of the planks we could and squirreled them in every possible nook and corner to let the wood equalize with the building. Now, every November—before the building dries out from the summer humidity—we bring in all of the pine planks we will need between January and April. We buck them to length and store the 22-in. cuts in the kitchen closet and the upstairs storage room. This allows them to equalize slowly with the air in the building.

Our experience in the new building underscores a common misconception—that kiln-drying has freed woodworkers from worries about moisture content. I recently read such a comment posted on a Internet bulletin board. This posting was as foolhardy as saying because we have technology we can ignore Mother Nature. Kiln-drying may bring wood down to 6%, but it is seldom that dry when you buy it. As soon as the wood is brought out of the kiln, it starts equalizing to the higher relative humidity. Because the wood passes through lots of middle men who generally store it outdoors, there is ample time to complete the process

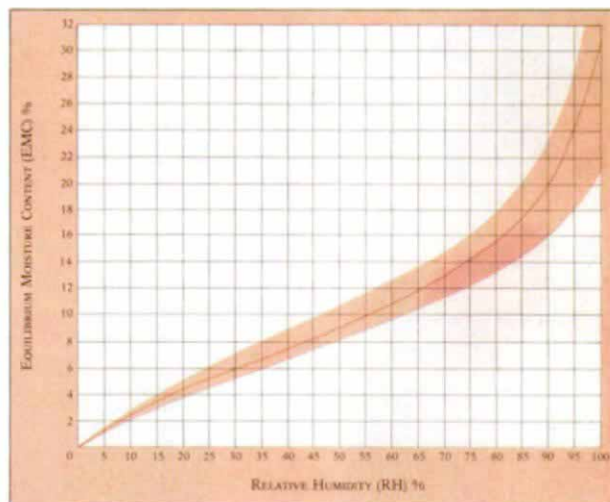


Rules of Thumb (continued)

of equalizing before you buy it.

As I was contemplating this column, I monitored a pile of clear 1-in.-thick pine purchased this summer from a local lumberyard. The wood was stored in a well-protected, three-sided shed—precisely the same conditions as at the yard. At the time of purchase the wood was at 10%. A severe drought followed, with one bone-dry, crystal-clear day after another. By mid-August the wood was down to 6%, as it probably had been when in the kiln. After Hurricane Dennis passed through and brought some badly needed rain, the moisture content increased to 12%. Only a couple of weeks later we had to endure Hurricane Floyd. The moisture shot up to 18%. Two weeks later it was between 10% and 12%. The lesson is to equalize wood in the shop before working it. Monitor it with a moisture meter.

A woodworker whose shop is in the cellar needs to be even more conscious of the problems with moisture content. The air in an average cellar is far more humid than air above ground. A dehumidifier helps some, but keep an eye on your humidity gauge. Keep your moisture meter and Hoadley's chart handy (above).



Wafer in wood. As the relative humidity increases, so does the moisture content of a piece of wood. Therefore, wood stored in your basement will have a higher moisture content than wood in your attic. In this graph from *Understanding Wood*, the horizontal numbers indicate relative humidity, and the vertical numbers indicate moisture content.

Earlier in my life I worked in a cellar. After a couple of problems with warping, I learned to store my wood elsewhere. The short stuff went in the attic. I was not beyond storing longer pieces under the bed so they could equalize with the house's air before being taken downstairs to be worked. Of course, some guys never learn. Not too long ago, a fellow woodworker sought advice for his most recent idea. He wanted to cut discs off freshly fallen logs of an appropriate diameter with a chainsaw and use these as tops for a set of bar stools. When he left he was very annoyed with me and still unable to understand why I insisted the discs would split.

Note: This year The Taunton Press will publish a revised version of *Understanding Wood*.