

Wood Panels and Humidity

by: Dave Markel Coping with wood movement All wood workers need to be aware of wood movement when building furniture projects. Failure to consider this important factor can cause wood panels to crack or split. My high school biology teacher compared the structure of a piece of wood with a bundle of straws. The straws represent the cells and capillaries of the wood. When a tree is growing water and food are transferred up through the cells and are carried throughout the tree. Once a tree is fell the free water in the wood is lost rather quickly but the bound water trapped in the straw like cell is slower to dissipate. As the level of bound water is reduced these straw like cells get narrower in diameter but maintain their length. This is the fundamental reason that wood expands and contracts across its width but has almost no expansion length wise. When working with wood it is very important to allow the wood to expand and contract with changes in humidity. As humidity rises the straw like cells expand in diameter with the opposite effect occurring as the relative humidity falls. Ways to accommodate expansion Lets use a cutting board for the first example. A solid wood cutting board with a bread board edge secured with a tongue and groove joint. One edge has the bread board edge secured on both ends with a dowel through the tongue The other bread board edge is secured with the same tongue and groove joint but this end only has a dowel in the center of the piece. The end secured with two dowels will develop a crack in the main panel. Since the length of the edge piece doesn't change having it fixed across the width of the main panel from expanding. Alternatively, the opposite end of the cutting board is only fixed in the center. The main panel is free to expand and contract towards the ends. The only visual difference would be that the ends of the edge piece are no longer flush with the edge of the main panel. The second example uses a large glued up panel such as a table top. If the table top was fixed to the rails across the width of the panel the rise and fall of humidity would undoudtable cause the panel to split. The best method to overcome this is use wooden clip to attach the two pieces. A 1/4" x 1/4" dado milled on the inside upper edge of the rails. This accepts a wooden clip that fits into the dado and is then secures to the underside of the table top. This will security hold the top hold the top onto the rails without restricting the expansion and contraction of the large panel. Without this the table top would slowly start to open up. In general anytime you are fixing one piece of stock across a large glued up panel measures need to be taken to allow the panel to move. Remember that it will expand across its width but not its length. Using one of the two methods mentioned above you will be able to prevent your glued up panels from splitting.

About the Author

Dave Markel is the author of "The All Wood Working Journal". He has helped hundreds of individuals improve their wood working skills. Visit his site at <http://all-wood-working-plans.com>. Subscribe to the All Wood Working Journal at <http://all-wood-working-plans.com/wood-working-tips.html>.

Source: <http://www.serverforever.com>