

## Can Wood Shrinkage be Prevented?

Wood in a tree is wet. When logs or lumber are cut from trees, the wood dries and shrinks. A further complication is that wood shrinkage is not even, so drying often leads to cracking of the wood, as some parts of the wood try to shrink more than others.

There are only two possible ways to overcome the problems associated with wood drying and shrinkage: allow for shrinkage or prevent shrinkage. Allowing wood shrinkage to occur is the most common, easiest and best solution. Preventing wood shrinkage is possible, but only rarely is it practical.

Making allowances for wood shrinkage: Sawing of lumber from logs, combined with careful drying practices, can result in dried wood that is free of cracks. The wood still shrinks but the drying stresses are prevented from breaking the wood. If the lumber is then protected from water or severe humidity variations, any future swelling and shrinkage of the wood will be small enough to usually not be a problem. Unfortunately, in logs or large pieces of wood that contain the pith (center of the tree), the shrinkage imbalance in the wood will usually cause checking no matter how the wood is dried. This is why the walls in log homes always have checks.

Preventing wood shrinkage: It is possible to prevent the shrinkage of wood by treating it with chemicals. Such 'wood stabilizing' treatments replace the water in the walls of the wood cells. Because these chemicals don't evaporate like water does, the wood doesn't shrink as it dries out. One wood stabilizer is polyethylene glycol (PEG), which is available under different brand names from woodworking supply companies. However, wood stabilization is a relatively expensive and time-consuming process, so it is only practical for small, high-value pieces such as carvings.

Drying and shrink are fundamental material properties of wood. While it may be possible to prevent shrinkage for some specialized applications, the best way to deal with wood shrinkage is cut, dry and use the wood in ways that allow for shrinkage to occur.

For more information, contact Adam Taylor at [AdamTaylor@utk.edu](mailto:AdamTaylor@utk.edu) or 865-946-1125