

## Green Wood

**Checking (cracking) and warping** are of major concern to woodturners. Though warping can be used to produce nice results if desired.

**Checking:** The cells and pores in a trunk are aligned with the axis of the trunk or branch. They could be viewed as a bundle of straws that transport water and nutrients from the roots up the trunk. When the trunk is cut and the end grain is exposed, water is rapidly lost out of these cells and pores. This causes rapid drying of the end grain and results in rapid checking. This combined with the differences in shrinkage rate causes problems for the woodturner.

**Warping:** Most woods shrink 1.5 to 2.0 times more tangentially than radially. Radial shrinkage averages between 3% to 5%. Tangential shrinkage averages about 6% to 10%. We split our woods in half to reduce the stresses and checking, but this doesn't stop it. This is the biggest reason rounds of wood split from the bark towards the pith. Wood shrinks about .01% to .02% in length (along the tree or branch axis). The illustration below shows how grain direction effects warping.

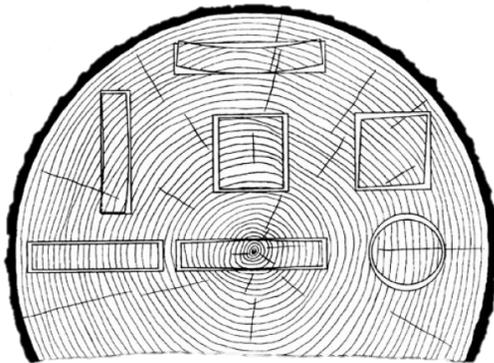


Illustration from the USDA Wood Handbook: Wood as an Engineering Material. This shows the effects grain direction has on wood as it dries.

The pith will be off center in a tree that leans. This produces tension wood (in hardwoods) in addition to the normal wood. Tension wood is denser and will shrink and move differently than normal wood.

### Here are a few of the many methods to reduce checking:

1. Turn green wood straight to a finished part and then put in paper bags to slow drying. This works with many woods. Fruit woods and madrone are still more prone to problems.
2. Split the round in half as soon as you get it and coat end grain with melted paraffin. This is the BEST sealer. Though it is an inconvenient and messy process. Store in a cool, dry place (out of the sun).
3. Split the round in half as soon as you get it and coat the end grain with green wood sealer. It is still best to turn this as soon as possible and store in a cool, dry place (out of the sun). End grain sealer buys you time and is not a fix all.
4. Drop in a barrel of water and keep submerged until you can turn it. Don't use a steel barrel, it will rust, and discolor the wood.
5. You may wish to rough turn your wood and then finish turn it later. You can delay checking by using any of the methods above and then rough turn. The wall thickness in rough turned bowls should be about 10% of the bowls diameter. After rough turning you have more options:
  - a. Seal with green wood sealer and let it dry one year per inching of thickness.
  - b. Don't seal and put in a paper bag to slow the drying. The bag should be changed frequently to prevent molding, particularly in the first few weeks.
6. Many turners boil their rough turned or finished turned blanks in water when dealing with fruit woods and madrone. This helps reduce checking.