

Our goal is to transform a fresh section of log into useful bowls or wooden art without getting hurt or wasting a lot of effort while making fancy firewood. There will be some firewood and occasionally some fancy firewood that we spent too much time on.

Tools **required**: PPE, Chainsaw, Lathe

Tools **not required** but nice to have: Anchor Seal, circle templates, Bandsaw, Larger Bandsaw, Much Larger Bandsaw, Overhead Chain Hoist to put really large pieces on the Much Larger Bandsaw

Wood shrinks as it dries, it shrinks in different amounts for each of three directions (which causes warping and/or cracking)

Consider a section of tree trunk that grew vertically (not leaning):

The wood shrinks a negligible amount along the grain as it dries {axial}

The wood shrinks a fair amount along a line from the pith to the bark (1.6 – 8% depending on species and individual tree) as it dries from fresh cut to 10% moisture {radial}

The wood shrinks even more along a growth ring (3 –12% depending on species and individual tree) {Tangential}

I believe in learning about the woods I use, a good source of information on shrinkage of individual species is <https://www.wood-database.com>. Note that the shrinkage rates/ ratios are not the whole story of whether wood will crack. Some woods are tough, can distort without cracking and some are brittle (Eastern Red Cedar). I find the shrinkage numbers are good for comparisons between species, but I suspect that variations between individual trees make any numbers to the right of a decimal point worthless.

An additional problem is uneven drying. If green wood is exposed to excessive drying conditions, the outside surfaces will dry (and shrink) while the center is still wet. This is why we coat green wood with a sealer to slow down the drying process. Once the “free water” is gone, the problem with rapid drying is greatly diminished. There are several methods available to speed the drying process with varying success rates. Normally I have extra rough-outs dry and don't worry about how long it takes. Some of the more popular ways to speed up the process are:

- Soaking blanks in diluted dish soap or laundry soap for a couple of days – several friends tried this and reported some success, but I don't know anyone who stayed with this method.
- Soaking blanks in denatured alcohol before drying – several friends tried this, I understand it works better than soap, but the alcohol is expensive. It is too much of a fire hazard for my shop as I also do some grinding and welding.

- Boiling blanks before drying – I have tried this; it works well. I used a turkey fryer pot and propane burner to process some Post Oak rough-outs for a customer who wanted candle holders from a tree that had sentimental value. It greatly sped up the drying process and reduced cracking a LOT, still had lots of warpage. It was a success but too much trouble and expense for everyday use, I would do it again for special pieces of troublesome wood. (Post oak is a troublesome wood.)
- Some people use a kiln to speed up drying of bowls / blanks, care is needed to avoid causing problems. I am sure that it can be done right and that if done wrong it will destroy a batch of bowls. I have not been willing to learn how to do it right.

To avoid cracking, we do these things in various combinations:

Slow down the drying process

Cut blanks that do NOT include pith

Remove some material to allow stress relief while drying (allows some warping).

Turn the piece thin while wet (removes nearly all the drying stress but allows severe warping).

To avoid warping, we do one of two things:

Work with wood that is already dry.

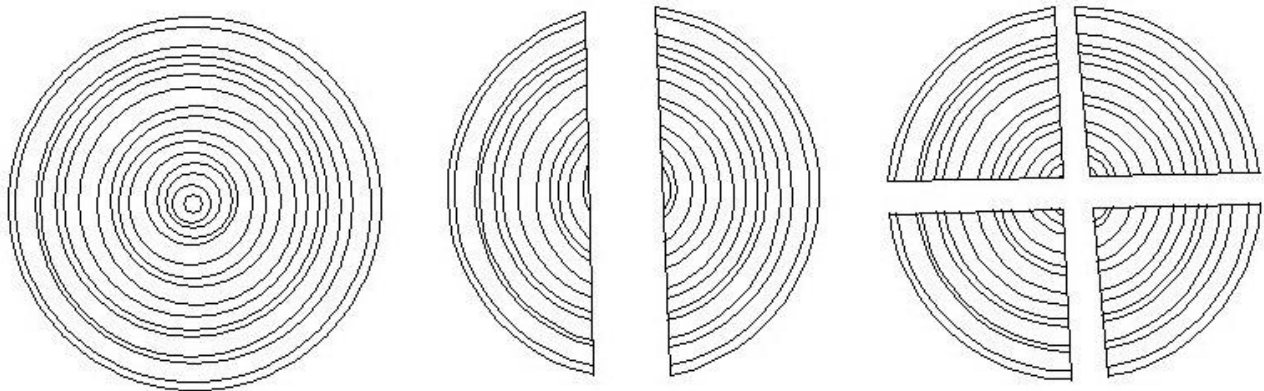
Work with some material other than wood.

I don't expect to ever get to the point where every piece of fresh wood turns out just like I had expected so my goal is to keep the success rate high enough that I don't get too frustrated. If you have some fresh wood and want to make it into useful bowls or turned art, these tips will provide a decent success rate for most woods: (Note that there will be a few failures)

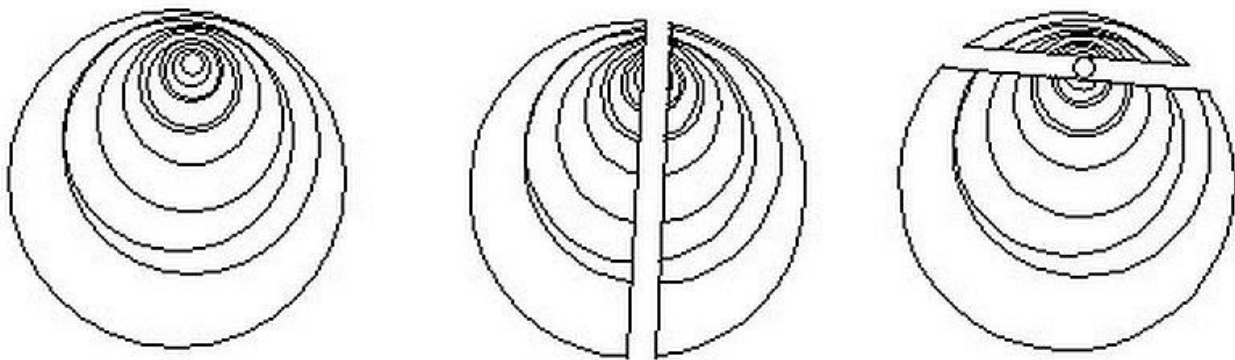
- Do something with the wood while it is fresh, do NOT wait until it starts cracking from drying out. In East Texas winter months, there is not a big rush. In summer months, turn it quick or plan on using it as firewood.
- Small blocks can be dried whole and turned later. The definition of "small" depends greatly on species and control of the drying rate. For pieces that are not "small", choose between turning it green to finish thickness or turning it into rough-outs that will be turned again after drying out. For any of the oaks, I prefer turning to finish thickness while wet. If you decide to turn to finish thickness, try to do it in one session. It may be ok to stop for lunch with some precautions, it is NOT likely to be ok to finish turning a day or two later.
 - Natural edge bowls can be turned to finish thickness with a good chance of keeping the bark and look fine with a little warping.

- Some people like their functional bowls to be round and some like the organic shape of ones that were turned to finish thickness and are now oval.
- Hollow forms, especially ones with small openings, are much easier to turn to finish thickness than to twice turn them. I like the organic appearance of an oval hollow form.
- Pieces that have geometric decorations look best when round (not warped).
- Lidded bowls (and their lids) need to be dry so turning rough-outs and turning them again when dry makes good sense.
- Platters are best turned from dry stock or rough-outs that have been dried.
- Pieces with crotch figure or large knots can make striking projects but failure rates will be higher than straight grain pieces.

For the best success rate, cut blanks as shown below before turning into rough-outs. Logs cut into four pieces as shown below can be stored (with the ends sealed), many will dry without cracks. Logs cut into two pieces will have high failure rates if stored long term.



If you are working with a limb (off-center pith); use the diagram on the right, **NOT** the center diagram.



For rough-outs, make the thickness about 10% of the diameter, with the center (bottom) slightly thinner. I coat my rough-outs with AnchorSeal, they are dry enough to finish turn in a couple of months (perhaps three months in the winter for large ones). Wrapping them in brown paper is less expensive and they dry faster with a slightly higher failure rate. If you have excessive cracking, the piece was too thick. If the piece was too thin, it will warp so much that it cannot be turned round. For difficult woods like oak, the margin between too thick and too thin is small. For most woods expect the majority to dry successfully and don't get stressed about an occasional failure.

If you are adventurous, try turning pieces with the pith included. Turn the piece somewhat thin and put the pith in a curved area, expect warping, a few cracks and some failures.