

Alcohol Drying for Green Wood

Contributed by Devon Palmer

Many of you who are familiar with woodturning forums on the internet have probably heard of different drying techniques, from polyethylene glycol (PEG), pentacryl, boiling, soaking in soap, and microwaving. The latest drying fad is the use of denatured alcohol.

My experience with alcohol drying yields a 15" roughed-out bowl at 12-13% moisture in four months with a little less warpage, and a little more stability in the finished piece. It doesn't seem to change the texture or the look of the wood as soap, PEG, or pentacryl do. In addition, the risk of food contamination is greatly reduced because the alcohol evaporates. In this article, I'll discuss my method for alcohol drying and provide references for more information.

Before starting, make sure you have adequate ventilation and fire suppression, and follow all handling, disposal, and safety labels on the container. Be mindful of all local and federal law associated with denatured alcohol.

I start by roughing out green bowl blanks or spindles. For bowls, leave the wall thickness the standard 10% of the diameter at the rim, tapering down to 7-8% at the base of the bowl to account for side-grain shrinkage. Spindles are roughed to "near round" so that the outer surface is uniform thickness to the center of the wood for even drying. I then place the green blanks in a 60-quart stainless steel stock pot left over from my beer brewing days. It measures 18" in diameter and it holds eight to ten 15" blanks with about 10 gallons of denatured alcohol. You can pick these used pots up for less than \$100 at restaurant supply outlets.



I soak items up to 1" thick overnight; items thicker than that for two to three days; and spindles for a week, since most of the absorption is side-grain. Long soaks of five days or more do not appear to degrade the quality of the wood, but they do speed the drying of larger blanks to a dangerous rate (I've lost a few bowl blanks that have soaked for more than five days). The alcohol will darken with use as compounds from the wood are dissolved in the alcohol. Be generally mindful of the type of wood you're putting into a clean batch of denatured alcohol. After changing the supply, I start with blond woods such as ash, maple, and elm, then work through darker woods such as cherry and apple, with the final wood being walnut. Any discoloration from soaking generally stays close to the surface of the wood and will be removed when you finish the piece. The cost per unit is surprisingly low. I can dry the equivalent of sixty to seventy 15" bowl blanks before the performance of the denatured alcohol starts to degrade. I suspect that the degradation in performance is due to increasing amounts of water pulled into the alcohol from the wet wood. Once the alcohol is reduced to a third of its original volume, I retire it to a sealed five-gallon bucket and use it for drying small pieces of green wood for little projects (bottle stoppers, etc).

After their bath, I remove the blanks and set the workbench until the surface is just barely dry, fifteen minutes to an hour. I then date each piece *completely* with end-grain sealer, and place in a thickness paper yard refuse bag or a old grocery the sealer is dry (you'll notice that the sealer dries well). Seal the paper bag tightly. This creates a "microclimate" around the bowl, which keeps the level consistent from the edge to the center of the also slows the initial drying process, since the moisture lost in the first seven to fourteen days is This is especially important for woods that move a lot, such as apple, persimmon, and other fruitwoods.



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After thirty days, I remove the blanks from the paper bag and set them on a shelf, close to the ground, away from drafts or air movement, for one to four months. Items less than ½" thick achieve equilibrium in moisture content thirty days after unbagging. Items upwards of 2" thick can take almost four months (as opposed to two to three years). I usually cut the wax off and retrue the tenon 30 days before finishing, when the internal moisture content is below 15%.

A few additional tips:

- Wet wood works best. The free water in the wood appears to help the alcohol move into the wood faster. My experience with partially dry wood has yielded no benefit.
- Take care of cracks. If the wood has hairline cracks, make sure you fill them *completely* with CA Glue before you put them into the denatured alcohol. The alcohol does not seem to affect the glue.
- Don't soak toxic woods with non-toxic woods. There's been little to no discussion of toxin contamination. It seems risky to me, since tree resins are alcohol-soluble, so I play it safe and soak only food-safe woods.

Additional References:

- http://www.woodcentral.com/cgi-bin/readarticle.pl?dir=turning&file=articles_473.shtml
- http://www.djmarks.com/stories/djm/Alternative_Ways_To_Dry_Wood_Turnings_91744.asp
- <http://www.wnywoodturners.com/articles/alcodrying/alcodrying.htm>