

Threaded Boxes and 3D Printing

By Jared Bruckner

When in Florida this past January and February I spent some time looking through the last years issues of Woodturning – The World’s Leading Magazine for Woodturners (I get it digitally on my Fire) and noticed an article about how to use threaded PVC plumbing parts as inserts to make wood turned threaded boxes. The problem that I saw right away was the limited sizes available. But with a 3D printer, I could make threaded inserts of any size I wished.

When I got back near the end of February, I made a threaded box of walnut using 3D printed threaded inserts. I even printed a ring on the male insert which would show on the outside of the box when closed. I was not completely happy with the results because I had drilled the hole in the base to fit the outside of the 3D printed insert.

After the February DAWG meeting, I decided that I needed to do something out of a piece of red oak wood and a small threaded box with a 3D insert might work well. I would also drill the hole in the base the size of the interior of the threaded insert, as I wished I had done with the walnut box.

So I went looking in my wood supply for a suitable piece of red oak. But, since I do not like to turn oak, I had very little red oak wood. Several years ago, I helped Lloyd Speer cut down a large red oak tree near his house and I brought some of it home. When I told Lloyd that I intended to use some of that wood for my red oak threaded box, he told me that he was not sure it was a red oak.

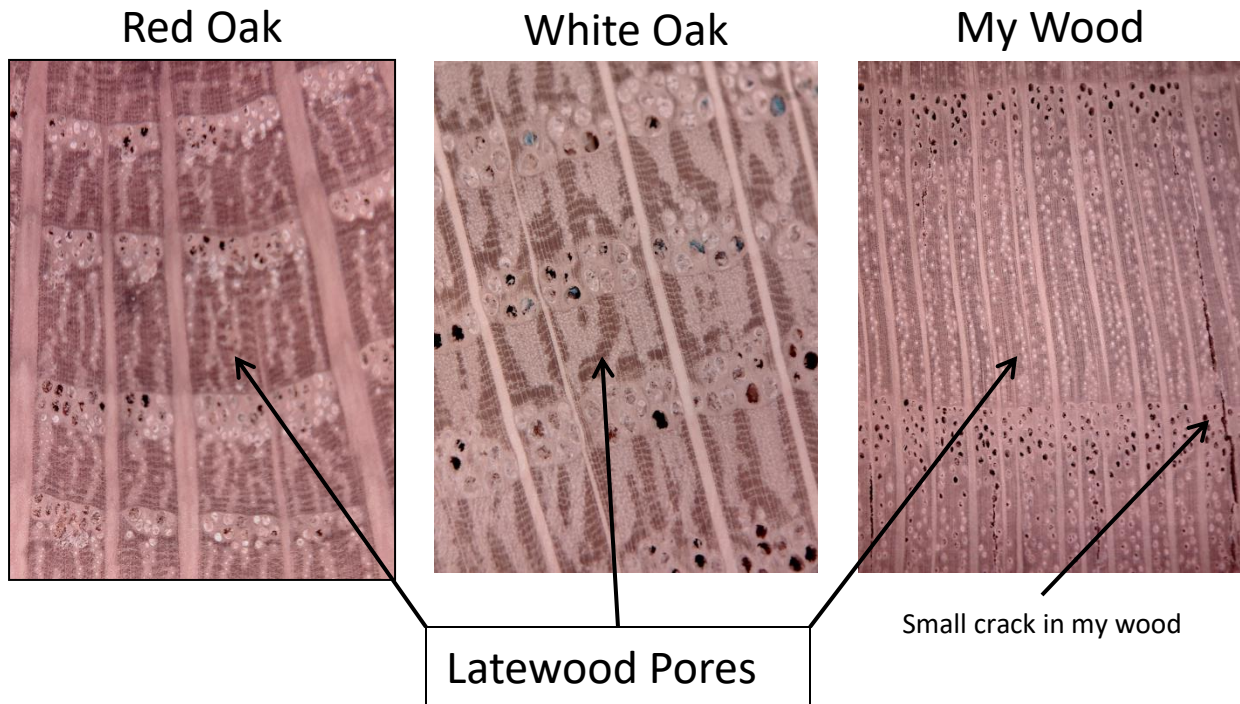
I have been interested in wood identification for some time, so I decided to take a piece of that wood and apply what I knew about wood identification to it. According to Bruce Hoadley’s book, *Identifying Wood*, the difference between red oak and white oak is rather easy to see when looked at under a hand lens.

The most easily seen difference is in the latewood pores:

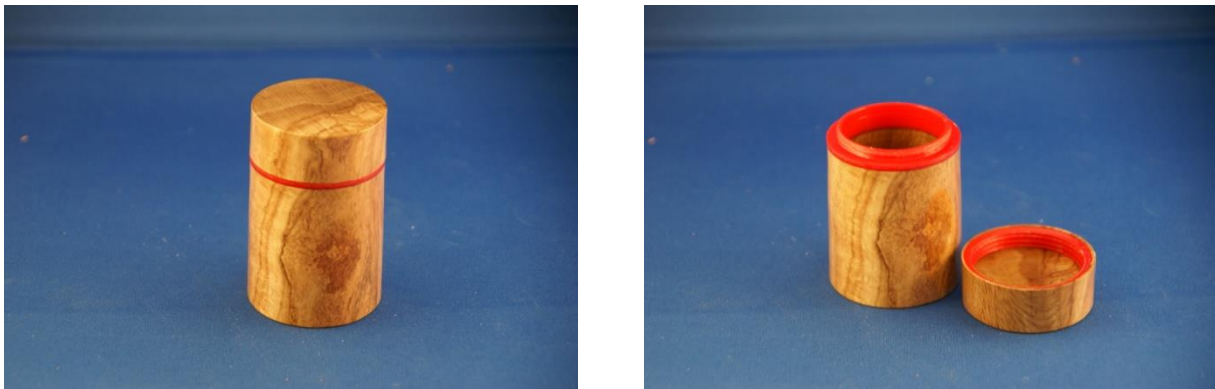
- For Red Oak – Latewood Pores are solitary in radial lines few and distinct (“countable”)
- For White Oak – Latewood Pores are small, solitary or in multiples, in spreading radial arrangement, numerous and indistinct (“uncountable”), grading to invisibly small.

Below are pictures of the end grain of know red oak, know white oak and my wood. The end grain of all the samples was sanded from 80 to 800 grit. In all samples the saw dust fills most of the pores, but you can still see them. Clearly my piece belongs to the red oak family.

Hoadley lists some of the red oak species: Scarlet Oak, Southern Red Oak, California Black Oak, Pin Oak, Northern Red Oak, and Black Oak.



I would also like to note that the PLA in the inserts is turnable, if you are careful to cut the plastic. PLA does NOT like to be scraped. See the finished piece below.



Hoadley, R. B. (1999). *Identifying wood: accurate results with simple tools*. Newtown, CT: Taunton Press.