

Amber Elegance, A Different View – Fred Messer

I turn a lot of spalted wood. Magnolia, Pecan, Maple, Sycamore, River Birch, Popcorn Tree, Water Oak, Black Gum, and last but not least Sweetgum. I think the main reason is that you never know what will show up in the spauling patterns of various types of wood. This process can turn a bland type of wood into something else entirely. We talk about the lines formed by the fungus, but they are really the intersection of the edges of a three dimensional solid area formed by the expansion from a single spore and the circular surface formed by the process of turning a bowl on a lathe. The shape of this solid area is a function of the grain structure of the wood and the growth rate of the fungus outward. When the surface areas from different spores meet, expansion stops and a dark line is the result. The expansion stops at these intersections because there is nothing left to eat on the other side of the line. It has already been eaten by the adjoining colony. The patterns formed by the intersections of the large number of solid areas eaten through by the colony, and the circular surfaces formed by our tools are infinite. When viewed as a very thin surface area the patterns are beautiful, but if there was a way to see down below the surface the view would be much more interesting.

We all know the many problems created by dust in our shops. In an attempt to lessen this problem, I stumbled upon a way to increase the depth of this surface. If I am turning a piece of wood which will have a water based finish I will brush water or some of the water based finish on the surface and leave it for a few minutes before turning or sanding. The same approach is used on oil based finishes where I use Mineral Spirits or a slow drying oil. A thin layer of the surface of the wood is softened for our turning tools or sandpaper. The wet surface during sanding forms a slurry hence no dust. I have tried various oils including linseed and noticed that on spalted sweetgum, it soaked deep into the wood and increased the depth of the finish. Having read articles on soaking Norfolk Island Pine, I started soaking the gum in linseed oil. A mixture of mineral spirits and oil worked best. Watco Danish oil will work very well for a harder finish that is not as yellow as Linseed.

Sweetgum – (*Liquidambar Styraciflua*) grows from Connecticut southward throughout the east into central Florida and as far west as eastern Texas. It is a hardwood and old trees will have dark brown heartwood which looks so much like walnut that during the wars a lot of it was used for furniture while walnut was consumed in gunstock production. If you are going to allow the wood to spault, choose clear all sap white wood. If you are going to turn it natural pick trees old trees which have broken tops or large knot holes because this allows water to seep down through the wood giving dark brown heart wood.

The two main fungi involved in the spauling process for sweet gum in South Mississippi seem to be *Ganoderma Lucidum* which is called Lingzhi in China and has been used as medicine for over 4000 years and *Pleurotus* or Oyster Mushroom which is one of the favorite edible Mushrooms in the south. The various colored lines in sweet gum are formed by various types of fungi most of which I have not identified. After Katrina a pink spauling that looks like that in Box Elder has appeared along the coast. I have seen it in sweet gum and sap cypress.

There are various methods of inducing spauling in wood but the Pascagoula River basin in south Mississippi seems to have an over abundance of Fungi. All I have ever done is just leave the wood on the ground or in a pile and it and it happens. The primary spauling which occurs while the wood is in large pieces seems to be black and formed in lines where the spreading fungus from individual spores will not cross into areas where other fungi have already broken down the cellulose. The various colored secondary spauling occurs during the drying process using plastic bags. If you wax the roughs less will occur.

Wood Preparation - I like to cut the wood into lengths of about 4 diameters + 16 inches. The extra 16" is for saw kerf loss and end loss (the end 6" or so will not spault well and also will check. Most woods will have better patterns if cut while the leaves are on. I lay the wood down in the shade and turn it monthly. The time needed to spault will vary depending on diameter, wood type and humidity and temperature but is at least 3 months for the smaller logs and a year max for the big stuff. There should be very little heartwood in your blanks, the heartwood will not spault so any blanks with a lot of heartwood should be turned green or not allowed to spault. You just have to let it go for a month or two and slice off 6" on one end and check. When the wood is ready, cut it into diameter length pieces and slice it down the center or cut it cross grain if you wish to turn it end grain. At this point the wood should be rough turned and bagged or waxed if possible. A wall thickness of about $\frac{3}{4}$ - 1" seems to work well for sweet gum, pecan and magnolia. Other woods do not warp as much and may be cut thinner. If you want the process to continue do not wax but put the rough turned pieces in to a plastic bag remove the pieces every few days and turn the bag inside-out to get rid of the water which will collect inside. When there is very little water in the bottom of the bag take the roughs out and let them dry. I dry them inside in my basement part of my shop where they stay cool. For the wood to go translucent it has to be very well spaulted, soft and very, very dry.

Tools:

Chain Saws: I like Huskey's because they seem to start better. My smallest is a 136 with 16" bar and the largest are 395's with 36" and 40" bars. Chainsaws are a requirement in hurricane country and I live on the Gulf Coast on the water. You never evacuate without at least two saws (one for cutting trees and one for cutting the first saw out when it gets pinched) in the truck tool box to cut your way back home. Ripping chain is nice for cutting down the end grain. A good chainsaw grinder is necessary if you do much cutting as files are ok for touching up a chain but you can not keep the proper angles long. Remember a chainsaw is like a snake, mess with them much and you will get bit and one which is dull is very dangerous. Most of the bigger blanks (up to several hundred pounds) are split and the corners cut off with the saw instead of trying to round them up on the band saw.

Band Saw: I have an 18" Jet with a 1" blade for straight cuts, a 14" Delta with riser and a $\frac{1}{4}$ " "Woodturners" blade for circular cutting and a Grizzly G0621 for metal cutting.

Work Holding: I use faceplates on all blanks for roughing the bottom of the bowl and cutting the expansion dovetail. Very large pieces I will use a faceplate around a dovetail for hollowing out the center and then use the dovetail for returning. I have found that expanding smooth dovetail jaws and very slow speeds (most of my roughing of spaulted wood is at speeds from 30 _ 200 RPMs) will safely turn very large blanks.

Compression works well on end grain work but for side grain expansion plus super glue works far better for spaulted wood. Always line up two jaws with the grain. Smooth jaws work far better for expansion. My best chuck is the Axmister with 4" smooth jaws, the second best is the 5 1/2" Vicmark with smooth jaws. I use the Oneway Stronghold more since they now offer smooth jaws. Vicmark offers the largest pie jaws (19") another plus for Vicmark chucks.

Turning Tools: By the time the wood is ready to rough into bowls it is still damp and very soft. If the wood is dry it is hard to turn. At low speed, rough the bowls into shape using a 1/2 inch bowl gouge as a large 3/4 or 1 inch gouge may cause breakout of the expansion dovetail. You can use a large gouge while the blank is on a faceplate but even a 1/2 inch may be too large while on the chuck. I use a 45 degree angle for both roughing and finish. Do not worry about a smooth finish at this point.

Pre-finishing: When the roughed out blank (3/4 to 1 inch) has gone through the sacking and drying process for several weeks, it may need to be trued up slightly by holding the out of round blank with pie jaws or a vacuum chuck and held by the top edge while the dovetail is trued first. After the dovetail is trued up it is placed in the chuck and the rest of the bowl trued up. This truing need not be exact because after drying the blank is now ready to start the soaking process in 1 part boiled Linseed oil and 2 parts Mineral Spirits. After the first overnight soak in the oil it is removed and put outside in the shade and dry for a day. You can now true up the bowl to close to the final thickness. You will find that the almost impossible to turn wood will now turn easily. After turning, sand the wood for the first time with 100 grit paper. There will be no dust as the oil/dust forms a slurry. The blank can be resoaked several times with drying for a day followed by resanding and resoaking. When you have the piece like you want, put it up inside in a cool place and let it dry as long as it takes for the finish to get dry. At this point you should have no finish on the wood only in the wood. The blanks may now be left in this stage as long as needed prior to final finishing.

Finishing: After the blank has dried, sand down to 400 grit and finish with steel wool. If I use an additional finish, the one I generally use is Tung Oil if I want the bowl to shine. It should be applied in very thin coats with a small pad of nylon. The more and thinner the layers you apply the better and harder the finish will be. I have used just about any kind of both oil and water based finishes made and they all seem to work. Just go for the look that you like. You can leave only the Linseed Oil sanded down to 400 grit and steel woolled till smooth. This is a very soft finish but allows for easy refinishing as you only have to sand scratches smooth after applying a light coat of linseed oil.

Examples:

1. Rough Log: This is a typical log section of sweet gum showing several types of mushrooms including Ganoderma Lucidum. This piece was cut last spring.



2. Chain Sawn Hex Half Log: It is easier to just cut off the corners than to bandsaw the piece round. At this stage the blank should be fairly wet and should be rough turned before it begins to dry. The wood is soft at this stage and if dried it will tear out badly while turning. Turn it quickly or it will check badly.



3. Initial rough turning: The blank is turned while still damp. An expansion dove tail is cut in the bottom. The thickness of the walls is left at about an inch. The blank is then placed into a plastic bag, but do not seal the bag.



4. Drying in bags: Several blanks can be placed in the same bag and stored inside. The blanks are initially left in the bag for a few days and then they are removed and dried for about 8 hours. The bag is turned inside out and dried at the same time. Water will accumulate in the bottom of the bag for the first few drying cycles.



Secondary spauling shown at the right will occur during this process. The blanks are removed every two or three days and dried at the start of the cycle. Later in the process they are only removed every week. This continues until the blanks are dry. Mixing different species of wood together in the same bag sometime will give some strange colors.



5. Returning after bagging: The blank is turned as soon as it is removed from the bag. It will turn easier while it is still damp from the bag and prior to final drying. Do not worry about a nice finish at this point. Only take a light cut to clean up the surface inside and out.



6. Final Drying: If the bowls are still moist they should be put into plastic bags for a couple of days and removed for a day as done earlier. When they are dry, remove them from the bags and put them up until they are very dry. I put them up in overhead racks for at least a couple of weeks prior to soaking in the oil. They must be bone dry prior to soaking. They can be nuked to be sure they are dry.



7. Soaked in Linseed oil: The bowl has been soaked in Linseed Oil overnight and the excess Linseed Oil is draining back into a plastic 55 gallon which has been cut in half. The time needed for initial soaking will be longer in the winter than in the summer. The bowl will generally sink when it has soaked all the way thru. You can simple paint the oil on with a brush if you do not want to go to the expense of buying 20 or 30 gallons of linseed/mineral spirits. Filling the bowl with oil while placed in a plastic bag will work also. Test the bag with the oil/mineral spirits before having a messy spill.



8. Returned after drying: After soaking and drying outside in the shade for a day the bowl is returned to about the final thickness. If you turn it too soon you will sling oil everywhere. The bowl will turn like butter at this stage. If you wish you may leave the bowl slightly thicker than final thickness to allow for returning. If the oil has not penetrated all the way thru the walls, soak it again and recheck.



9. Drying after soaking in oil: After soaking and returning the bowl is sanded to 150 grit. I put them on the drying rack in the top of shop for several weeks until they are well dried. They can be left in this state until needed. At this stage the chuck dovetail is left on the bowl because they may need to be returned if they warp.



10. Final finishing With Tung Oil: This bowl was finished with 5 very thin coats of Tung Oil. The oil must be applied after the Linseed Oil has dried for several days and then resanded and finished with 00 steel wool. The Tung Oil is applied in very thin coats and allowed to dry between coats. Tung Oil is far harder than Linseed Oil and will stand up to harder use and also give a brighter finish. The last step is to cut the bottom down and finish it. I will leave the dovetail on and finish it. This will allow repairs/refinishing later on. This came in handy after Katrina when the bowl could be found. I have put bowls finished with Linseed Oil in the dishwasher and they held up well. I don't know how the Tung Oil over works though.

