

# Practical Finishes

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Topics: Shellac, Behlen's Woodturner Finish, Wax (Renaissance and Liberon), Penetrating oils (Danish oil, Boiled Linseed oil and Teak oil) Butcher Block OIL, Walnut Oil, Hard Cellulose Nitrate Lacquer (Deft)

**Shellac** comes from the excretions of the [lac insect](#) *Kerria lacca*, found in the forests of [Assam](#) and [Thailand](#) (Wikipedia).

Shellac can be purchased in two basic forms, commercially mixed in a can with other chemicals and natural flakes that you dilute into denatured alcohol. Both of these forms have variations you can buy for effects you are looking for.

I suggest blond (no wax) Shellac flakes for the following reasons. The commercially canned (with chemicals added) version will settle particulates when left to sit and has about a one year shelf life once opened. While commercial Shellac can be purchased in various volumes, you are restricted to that volume. Because of the settling, the user must constantly re-suspend the particulates. Blond flakes of Shellac diluted into denatured alcohol will not settle as there are no particulates in suspension (the Shellac actually dissolves into the denatured alcohol), can be mixed into any volume you want, will darken the wood very little if at all and still have about a year or more shelf life. My father's jar of dissolved Shellac is 2-3 years old and when diluted 1/3:2/3 (read below for dissolving and thinning) works great. Shellac flakes (not dissolved) that are sealed may last many years.

Diluting commercially canned Shellac per the instructions on the can requires some fooling around to get the desired results. I still have not had satisfactory results. Diluting Shellac flakes into a base solution of Shellac is simple. Use a glass jar of desired size (not too big or it won't be used in a timely fashion e.g. a year or two). I use a jar that had pickled beans from the grocery. It is about three inches tall and about one and a half inches in diameter. Fill the container about ¾ full of denatured alcohol. Add several "pinches" (my thumb and index finger) of Shellac flakes to the jar, seal the lid and swirl or the flakes will adhere to each other and take more time to dissolve. Let sit and revisit occasionally (one to two hours) to swirl and check that they are completely dissolved. Once dissolved, add a few more pinches, swirl, seal and revisit as above. Continue the process until there are small particulates of Shellac that will not dissolve. The denatured alcohol is now saturated and the base solution of Shellac is complete. This process takes me about one to two days.

To use home mixed Shellac, you must add more denatured alcohol for it to be thin enough to spread effectively. I separate a small amount of the base solution of Shellac into a new container (I use a plastic, one oz jar). Fill the new container ½ full of denatured alcohol and an equal amount of base Shellac solution (e.g. equal amounts of each). This mixture produces a

very nice surface coating but is thin enough to spread quickly. As thin as I would go is 1/3<sup>rd</sup> Shellac and 2/3<sup>rd</sup> denatured alcohol. This thinner solution will flow easier into tight places and leaves a thinner coating of Shellac.

Application of Shellac works for several purposes: seal the wood prior to application of other finishes (Lacquer and or wax), seal the wood to prevent resins in the wood from weeping to the surface, seal the smell of smoke and other odors into wood that would otherwise foul the senses of a sensitive person, seal the wood then buff into a standalone (French) finish and lastly you can add dyes to Shellac to combine surface treatment (color) with surface protection.

To apply as a sealer, dip a soft cloth (flannel works best) and apply to the spinning wood (~600-800 rpm). If you are applying to heavy of a coat or too many rpm's, the Shellac will spin off and produce a non-smooth surface requiring repair and subsequent coats. To hasten the drying, apply a heat source (light bulb works great... no open flames please) for a few moments. After the Shellac is dried, I use 0000 steel wool (or the manmade equivalent) to smooth the surface and add fine scratches for the follow on finish to adhere to.

To apply as a finish, apply as above. Re-apply two-three coats as above and use light pressure, not rubbing. If you use too much pressure, the new Shellac will dilute and thin the surface of previous coats of Shellac.

If you want a glossy surface (French finish) there may be many options but my highest recommendation is to increase the lathe speed to ~ 2000 rpm or higher and polish by applying clean, soft cloth (again flannel works best). Experiment with finger tip pressure of the cloth on the spinning surface. Too much pressure produces heat and will remove too much Shellac and scratch the surface with Shellac that built up on the cloth. Light pressure is better to start until you get the hang of the technique. Again, watch for built up Shellac on the cloth and move to fresh clean area of cloth when necessary. When you no longer see Shellac deposited onto the cloth you are probably done. Good lighting will allow you to see the gloss emerge on the spinning wood and find problem areas.

Shellac is not compatible with some follow-on finishes. Polyurethane will tend to gum up and not dry properly. Penetrating oils such as Spar urethane, Danish oil, Boiled linseed oil and Teak oil require penetration into the wood. Since they won't penetrate the Shellac and the wood they are not recommended.

**Behlen's Woodturners Finish** is obviously made with many volatile chemicals.

Concern should be had for all products as aromatic as this one. If it is used in small quantities only and it is not sprayed like Lacquer, a respirator may not be needed. Latex exam gloves are suggested to prevent absorption through the skin. This product is very quick to penetrate into wood and seals and dries well. I have not used it as extensively as Shellac because of how useful Shellac is. With the lathe turning ~800 rpm dampen a clean, dry, soft cloth with this solution and rub onto the spinning surface as with Shellac. Drying/curing will be complete in a minute or two. This finish does not appear to build up coats as with Shellac and Lacquer. More experimentation would be required for this finish to be use for other than a sealing coat.

**Wax** made by Renaissance (micro crystalline wax polish) is very expensive but requires a very small amount and is an excellent final surface treatment that adds further gloss and easy cleaning (wipe off fingerprints after my grandkids fondle my turnings). I leave a folded piece of flannel in the can and it becomes saturated with the wax over time and repeated use. Apply very sparingly. Wait a few moments (light bulb heat helps) and then buff only with a clean, dry, soft cloth at high speed with soft pressure. Repeated coats appear to increase the gloss to a small degree. Lastly, Renaissance wax can be used on any project months/years after completion to add luster and protection from finger oils and dirt. Clean the surface well and then simply wipe it on (covering the entire surface), wait a couple of minutes and buff with a clean, dry, soft cloth.

Liberon bar wax can be used to follow a sealer such as Shellac or Behln's Woodturner Finish. It is inexpensive and develops a nice finish that is easy to achieve and easy to clean. I have only used this on small objects (pens). With the lathe speed set at ~1200 rpm rub the wax bar onto the piece leaving a thin coat of observable wax. Increase the lathe speed to ~2000 rpm or more. Using a clean soft cloth start at one end and apply significant pressure to develop enough heat to melt the wax. This will penetrate very little but will produce a glossy surface. Areas such as V cuts or tight areas that you cannot get your finger into may require one or more techniques: use of your finger nail covered by the soft cloth, use a rigid piece of leather or other material covered by the soft cloth or simply fold the soft cloth and while holding at each end pull tight and force the cloth into the difficult spot to produce the pressure and heat required to melt the wax.

**Penetrating Oils** such as Danish Oil, Boiled Linseed Oil and Teak Oil all require clean bare wood in order to penetrate and harden in the wood. They do not build up surface gloss like Shellac and Lacquer do. They are all very simple to apply and give a very durable long wearing finish. Unfortunately these oils all require eight-twelve hours to dry/cure.

**Butcher block Oil** is a commercially produced product with an additive that dries the finish. This oil soaks well into the wood and should be monitored constantly. In the first fifteen minutes I constantly reapply to keep a wet surface and ensure a deep penetration. At the end of fifteen minutes, I wipe all excess oil off and allow it to dry over night. This produces a nice finish that is pleasant to the touch as well as the eye. The directions on the container suggest that you apply a small amount and let it dry and subsequent applications can be made.

**Walnut Oil** as suggested by Ted Bartholomew is an excellent finish for bowls and is the only natural food safe oil that will dry on its own (no additives). Application is the same as butcher block oil and subsequent coats may be applied.

**Hard Cellulose Nitrate Lacquer** is made by many, but Deft is in most stores and comes in liquid or spray can. I have not used the liquid version so I cannot comment on its use. I use the spray can as a follow-on finish (after Shellac) to produce a glassy glossy surface. "On

Site" by "rudd", Semi Gloss 92-0513 is just a shade better and the critical eye may notice the difference.

With the lathe spinning at ~600-800 rpm (protect the lathe bed with newspaper or cloth) and spray light coats with the can well back from the work, ~eight-twelve inches, making two quick passes from one end to the other and back to leave a thin/light coating. If you spray with the can too close or too many passes and produce a heavy coat, the Lacquer will build up and spray off causing terrible surface conditions that require difficult removal of the finish. One coat of Lacquer is sufficient and looks nice but will not take polishing as it will rub through. Four-six coats will produce significant orange peel. This orange peel can easily be removed with Behlen's Buffer's Polish (read below). Use a light bulb for heat as with Shellac to quickly dry/cure the Lacquer in a minute or two allowing subsequent coats to be completed in five-ten minutes.

Apply a very small amount (less than the size of a pea) of Behlen Buffer's polish (B730-2005), which may be purchased on line from <http://www.meritindustries.com/rsw.htm#pfb>, to a clean, dry, soft cloth (flannel) and apply to the area to be polished. Use light to moderate finger pressure or the Lacquer will streak (build up in small Lacquer ridges on the surface). After applying the polish (with some pressure, watch for heat and streaking) evenly on the surface for a minute or two, move to a clean part of the cloth. Re-application is often needed but care must be taken not to polish through the Lacquer especially on high spots such as beads and at the center of a piece such as the head of a pepper grinder or the center of a bowl. Remember that increased diameters (6 inches and more) on the lathe = faster surface speeds and increased heat. Either reduce the rpm or lighten finger applied pressure.

Be sure when polishing to use excellent lighting to ensure that all orange peel is gone but that you have not polished through the Lacquer. If you polish through the Lacquer, simply re-spray (3-4 coats) and re-polish. Practice will teach you about pressure, speed and when to stop!

Remember, increased diameter of the piece v/s surface speed increases heat and built up finish streaking (ridges) on the surface of the Lacquer and the center polishes through quicker than you think.

**Serious Health concerns** surround inhalation of sprayed Lacquer to include damage to the liver and the brain. A dust/chemical respirator is not optional but rather is a must. Read the manufacturer specifications for your filter to confirm filtration of chemicals. If you have a movable dust collection system (4 inch suction hose is great), you can position it behind the spinning piece in an area where the spray is flowing to and this will suck the overspray and remove much of the risk. The increased air flow from the dust collection will also facilitate the drying/curing of the Lacquer.

**Final thoughts:** Some finishes do not respond well to water and leave water marks. Some finishes are brittle (Lacquer and Shellac) and are not meant for hard wearing surfaces. Polyurethane is the only finish that I am aware of that is very durable, cleans well with water and lasts under much abuse (kitchen tables are often finished with Polyurethane).

Unfortunately, Polyurethane takes quite a while to cure and darkens the wood more than I want. I haven't experimented with polishing Polyurethane like I do Lacquer and Shellac.

It is my understanding that all finishes when left long enough are food safe. The question is how long is long enough. For sure, Butcher block Oil, Walnut Oil and Shellac are all food/children safe and should be considered when making food service items or toys for young children. Safety is always a concern when using chemicals. The use of a respirator and latex gloves will never be the wrong answer.