

1. Objective Tonight

- a. To introduce you to the different types of finishes
- b. Talk about the advantages and disadvantages of the finishes
- c. How to choose a finish
- d. And, Tom will demonstrate a beale buffing finish

2. Before we get started

- a. How many people have a designated paint area?
- b. How many have it enclosed?
- c. How many have a controlled environment – temperature, humidity, and dust free?
- d. $A + B = \text{Finish}$.
- e. For us to have a consistent finish, we must try to minimize or control these variables.

3. With reference to the book Rules for finishes

- a. My opinion is when it comes to finishes, there should be no rules, except the ones we make based on our own experiences...
- b. An exception is Safety Rules. You should always have
 - i. Good ventilation
 - ii. No electric heater when spraying or painting a finish
- c. Things we can do to control the outcome of our finishes in our shops:
 - i. Use of same finish
 - ii. Buy the best you can
 - iii. A Retarder slows drying time, thereby allowing the moisture to escape. This is especially important in lacquer finishes.
 - iv. A dryer can be used to decrease drying time. This is especially important in oil finishes

- v. **Tip:** On spray finishes, apply an even coat; don't swing back & forth
- vi. Apply thin coats. Build your finish up.

4. Why Finish Wood?

- a. Sanitation – wood is porous. It collects dirt, food, bugs.
- b. Stabilization – absorption of H₂O. Plus humidity.
- c. Decoration – Enhancement with embellishment (color, texturing, carving), or sheen (finishes)
- d. Sanding. Let me talk briefly about sanding.
 - i. General rule for sanding: progress through grits @ no more than 1.5 times the previous grit. Examples: 80, 120, 180, 270, etc.
 - ii. Start @ 80-120 and go to 320-400 grit.
 - iii. Apply a finish to the piece
 - iv. Then “finish the finish”. To finish the finish, I use Abalon, 500-4,000 grit with oil.
 - v. What the eye can see: Make sure that your sanding is perfect in-between each grit, and that the scratch marks from the previous grit are removed. Make sure your sanding is perfect before you start your finish, as the finish will magnify your sanding defects. The finish is only as good as what's below the finish.
 - vi. Always consider the feel of the finish. I use wax as the final finish, and I either use a beeswax or a renaissance finish, which brings the wood back to a more natural feel.

HANDOUT.

5. Types of finishes

- a. Bare wood
- b. Burnished wood – by sanding the wood to 600 grit and then we burnish the wood with red rouge, which equals 700 grit, then white

diamond, which is 1200 grit. Then abalone to 4000 grit, and then we can use micro mesh to 12,000 grit.

i. Bruce Hoover

c. Wax

i. Soft finish

ii. Little protection

iii. Types of wax

1. Beeswax - 150⁰

2. Carnuba - 180⁰

iv. Tip: If you are using paste wax as a polish over another finish and if you want to smooth and dull the finish at the same time, you are applying the paste wax, you can apply the wax with steel wool, rub with the grain.

d. Oils

i. Mineral oil, olive oil, vegetable oil, and motor oil do not absorb O₂; therefore they do not cure. These oils are good for salad bowls and utility bowls, excluding motor oil.

e. Drying Oils are really the beginning of our film finishes

i. Walnut oil, also called butcher block oil, soybean oil and safflower oil are semi-curing finishes. They are considered a soft finish and take several days to dry.

ii. Tung oil: Most tung oil we buy is Not 100% Tung oil. About 50% of the time. It is the most water resistant. Needs several days between coats. Cures to a soft solid.

iii. Danish oil, antique oil, Maloof Finish, and some labeled Tung Oil are blends of linseed oil and varnish oil. These are considered soft finishes, and cure to a soft solid. It allows moisture to escape, thereby allowing wood to breathe. This is a great finish for green wood. It allows the moisture in the wood to equalize to ambient humidity.

- iv. Tip: This is where my favorite finish and what I consider my signature finish.
1. I mix 1/3 oil,
 2. With 1/3 varnish, and sometimes I use spar varnish with a little UV mixed in with it and 1/3 turpentine.
 3. If high humidity, I sometimes use a drying agent
 4. All different brand oils and varnishes vary in color, from light to dark. And I vary my mixture of oil and varnish to get the color I want on my finish. The only way you'll figure out what color you want is to experiment with the oils & varnishes. When you find the mixture you like, write the combination down, and try and repeat that mixture.
 5. Tip: By making your own finish, you are able to control the A and B variables and come up with a consistent finish, whereas if you use a manufacturer's mixture, you use his color, which varies from lot to lot.
 6. Apply thin coats. Put on dry. I use a natural bristle brush. You can also use a rag. If you see brush marks or rag marks, you are putting it on too thick. Your finish should dry within 24 hours. If it takes longer, you have too much oil and add a drying agent.
 7. Between finishes 1-5, I sand down with 500 grit abalone with oil. Between finishes 6-10, I use 1000 grit abalone with oil. Between 11-12, I use 2000 grit abalone with oil. If I want a high gloss finish I use 4000 grit from then on for my final finish. On the last coat, I use a liquid polishing compound.
 8. Tip: Remember, Resin + oil + heat = varnish. The amount of oil will soften the finish, and more resin will make it a harder finish.

9. Tip: Oil + varnish + no heat = oil/varnish blend, also known as rubbing varnish. The ratio of oil to varnish will determine the hardness of the finish. Actually, you can move your finishes up and down the list by adding different additives, and different amounts of additives.

f. Shellac

- i. Shellac is a hard evaporative finish.
- ii. You can apply multiple layers. Each layer combines with the previous layer to become one layer.
- iii. You can apply additional layers within 10-15 minutes of previous layer, thereby building up your finish fairly quickly.
- iv. Shellac is simple to apply. You can use a plastic spray bottle, or a spray gun, or you can wipe it on with a rag.
- v. It makes a great sanding sealer and as Michael Mode showed us, you can combine it with an oil, and using your lathe for speed, which equals heat, you can have a great type of French polish.

g. Lacquer

- i. Lacquer is a dry evaporative finish. The new coat dissolves the underlying coat and they combine.
- ii. Characteristics are very similar to the shellac that we just talked about.
- iii. Since lacquer is a quick drying finish I can put multiple layers on fairly quickly, this is my go-to finish. You'll have a nice finish fairly quickly. I usually put three coats on, let it dry, and then sand with abalon and oil. The next day, I'll add three more coats, then go through finishing my finish.
- iv. Lacquer is chemical bonding finish. When sanding lacquer, you've got to make sure that you don't go through the finish to the wood. Otherwise, you will see a ring in your finish. The only way to get it out is to turn the lacquer finish into a sanding sealer and sand the piece down to bare wood again and start over. You

might, if you are working with dyed woods, is to use the dye around the ring and blend it in.

- v. With lacquer, I usually go to a high gloss finish, and then I back it down to finish I want, whether it is a matte finish or satin finish, with abalone and wax. A satin finish – I use abalone 2000 + wax(Renaissance or beeswax). For a matte finish, I use abalone 1000 grit + wax.
- h. Varnish – non-poly: Cures hard. Build up a finish.
 - i. Types: Waterlox, Seal-A-Cell, Val-Oil, Profin are wiping varnishes thinned with mineral spirits.
 - ii. Varnish is one or more oils cooked with a resin.
 - iii. **Tip:** We have been talking about resins. Some of the resins phenolic, Bakelite, ameno, and acrylic. They use acrylic to make Plexiglas. . They also used bakelite to make jewelry and radio covers. So, depending on your resin, you can see how you can make a hard plastic-like finish. Most of the time the manufacturers do not tell you what the mixtures are and the percentage of the mixtures. You can get different finishes with different manufacturers. When you find the right finish that you like, then consistently use that brand and make it your go-to finish
- i. Polymerized Oils
 - i. Boiled to 500⁰ in O₂ free environment with added resins.
 - ii. It is a thick finish.
 - iii. Examples: Southerland and Wells Polymerized Tung oil. These oils are used for gunstocks.
 - iv. These oils are thick right out of the can, for me they left brush marks and it was harder to put on with a rag. You can thin it, by adding a thinner to make it easier to flow on the wood, with less brush marks.

- v. The advantage of these polymerized oils is that they dry quicker and they dry harder.
- j. Polyurethanes
 - i. Polyurethane is a varnish made from either linseed or Tung oil with high heat and a hard polyurethane resin plus uralkyd additive.
 - ii. It is a hard plastic-like finish that doesn't bond well with other finishes, nor with itself. If you put it on too thick, it has a cloudy appearance.
 - iii. Sand between layers for better mechanical bonding. I find polyurethane is easier for small pieces. Get experience first before using it on larger pieces. You will have to work out the runs.
- k. Polyurethanes, two-part
 - i. Basically two-part urethane where you have an oil and a resin plus a hardener.
 - ii. I have not used this type of finish. It is harder to work with and you'll have to experiment with it on your own.
 - iii. Also have waterborne lacquers.
- l. CA Glue
 - i. A good hard finish
 - ii. It dries fast
 - iii. Hard to put on large pieces because if you have to stop, you land up with a glue line.
 - iv. Good for small pieces, like pens and small bowls
 - v. Each layer is a layer in itself; layer on a layer. Sand between each layer for better bonding.
 - vi. When sanding CA glue, try not to go through the bottom layer.
 - vii. We're starting to see a certain amount of failures with joints made with CA glue after long periods of time.

m. Plastics

- i. Epoxy plus a hardener.
- ii. Very hard finish
- iii. Hard to get a good finish
- iv. Messy
- v. Takes practice to get experienced enough to get a good finish
- vi. Good for joining pieces, like a teapot or for inserts and for decorative inlays

6. Types of Bonding

- a. Mechanical
- b. Chemical
- c. **Tip:** Binder – solvent or thinner
 - i. Solvent – dissolves a cured finish solid to a liquid
 - ii. Thinners – keep it simple. There are lots of thinners on the market, but this is what I use:
 1. Oil Varnish – Turpentine as a thinner. Oil varnish finishes do not need a solvent.
 2. Wax – Mineral Spirits for thinner.
 3. Shellac – Alcohol. Can be used for both a solvent and the thinner.
 4. Lacquer – Lacquer thinner. Can be used for both a solvent and the thinner.
 5. Polyurethane and varnish – Mineral Spirits can be used as a thinner.

7. Considerations When Choosing a Finish

- a. What is the use of turned piece – serving food, or simply for display?
- b. Where is it going to end up?
 - i. Gift – needs to be a durable finish, for those who know nothing about wood. I recommend a matte to high gloss finish, for those who appreciate your work.

- ii. Display –
 1. Gallery, usually likes high gloss pieces.
 2. Curio cabinet, matte to high gloss finish
 3. Instant Gallery, or being displayed before wood turners, I recommend a matte finish with feel of real wood.
 4. Craft shows, a durable high-gloss finish.

c. Attributes of a Finish

- i. Appearance you are trying to get. For example, if you want high gloss, you wouldn't use wax or oil.
- ii. Protection you need. The more protection you need, the harder the finish you use.
- iii. Durability
- iv. Ease of application and amount of equipment that you need. This is time, and could be a money consideration.
- v. Safety (to you). **Tip:** All clear finishes when fully cured are okay with food. Good ventilation. You don't want a fan blowing on your work, but you can have a small fan with a filter in front of your work, taking the fumes away. You can use this inside a cardboard box with a hole cut out the back, with a turntable. Now you have your semi-enclosed painting area, with good ventilation.
 1. Do not use electric or open flame heaters when applying your finishes.
- vi. Ease of repair.

8. Finish the Finish! Don't forget to finish your finish, as we discussed, with a good feel. You want to end up with a good looking finish, and with a good feel. Feel is as important, if not more important, than just a good looking finish.

9. When you go to instant galleries, whether national and state level, most of the critiques are pretty liberal when it comes to form, allowing the artist to present his art, allowing the art to be in the eyes of the beholder. But it comes to finishes, they are very critical of a poor finish. And they will quickly pick out a beautiful piece with a poor finish, and tear it apart because of the finish. That's why it's so important to "Finish the Finish."

10. Final Recommendation for Better Finishes
 - a. For the next 6 months, try as many finishes as you can
 - b. The following 6 months, choose your "Go To" finish and perfect it.
 - c. Then, choose your signature finish and perfect it.
 - d. Hopefully, this year we'll see our pieces on the table, with better finishes.