

# *THE CHARLOTTE SAWDUST*

The Official Journal of  
**The Charlotte Woodworker's Association**

[www.charlottewoodworkers.org](http://www.charlottewoodworkers.org)

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## **Small Talk**

If I were to compare my woodworking skills with the normal education grade levels, I **may** be in junior high level when compared with the whole population, but when it comes to finish knowledge, I probably am a pre-schooler.

I have so much to learn and it seems, not enough time to learn it. That is why I am ready to retire from work and spend more time in the workshop.

I have recently been doing some woodturning (maybe 4<sup>th</sup> grade level) and have tried my own finishes with less than moderate success (you won't see any of these projects in this month's show & tell meeting). I did some research on the internet and came across these articles that I found very informative. Sorry for the lack of photos but I figured that if I could learn from these articles then others may as well.

See you at next month's meeting.

Sincerely,

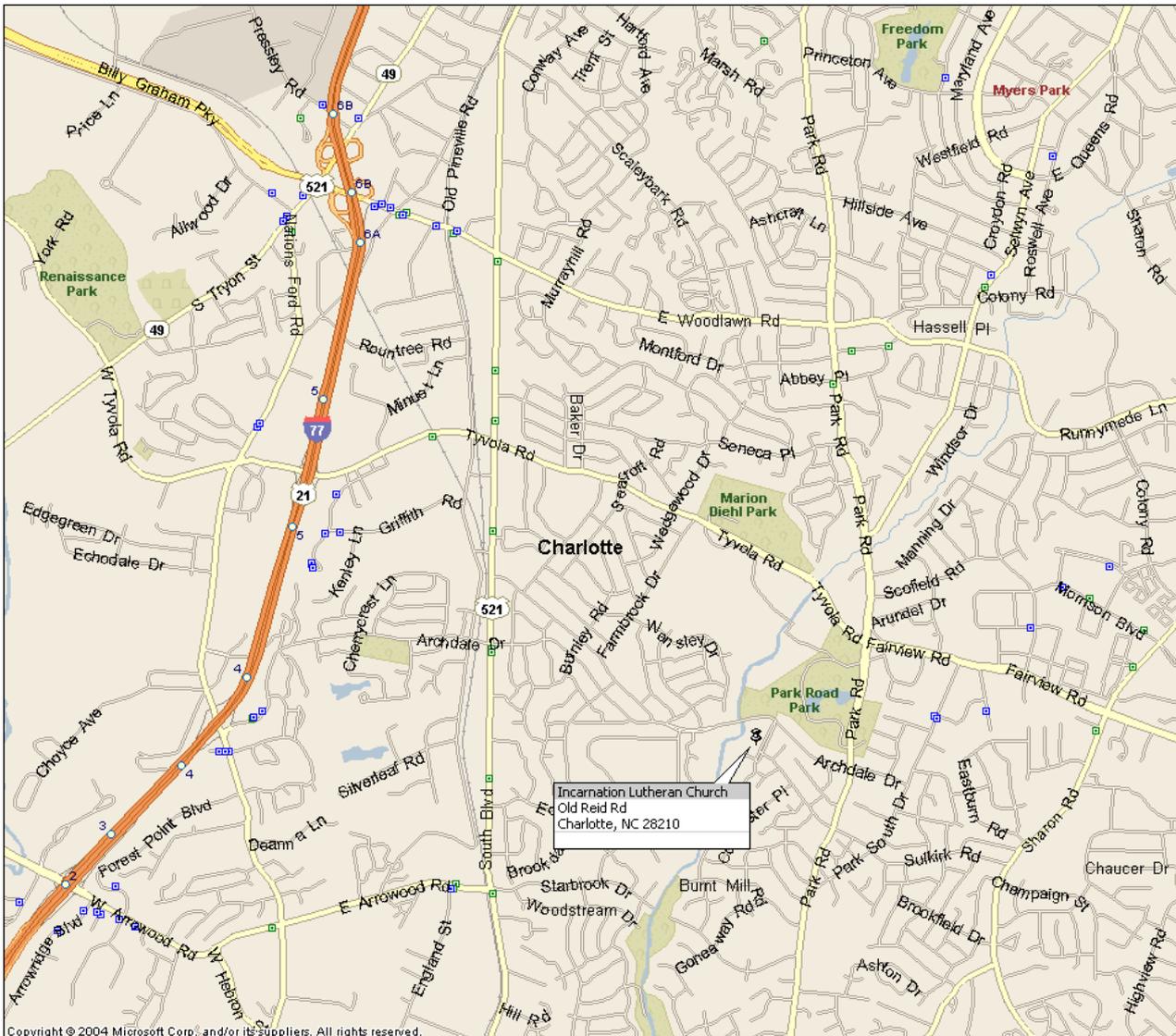
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(704) 379-1919 days  
(704) 814-9580 evenings

## **June Program**

Show and tell time!! Bring your projects, tools, jigs or anything else that may be of interest.

## Meeting Time

Meetings of the Charlotte Woodworker's Association are held the third **Tuesday** of each month, except for December. Meeting is to be held at the Incarnation Lutheran Church, 6400 Old Reid Road, Charlotte, NC (just off Archdale Drive).



Following a social and refreshment time that starts at 5:30pm, our meetings start at 6:00pm. Get to the meeting early and get to know your fellow woodworking enthusiasts. This will be our first time at our new meeting place but we hope that it will become a great home for us.

## Write an article for Sawdust (thanks for all the help from those that have)

Please consider writing an article for The Sawdust, this is your newsletter what do you want from it? What do you want to share with your fellow woodworkers? Everyone likes to share, share your successes, failures, and

mistakes, have fun with it and share with others at the same time. Contact Mike Dyer @ [secretary@charlottewoodworkers.org](mailto:secretary@charlottewoodworkers.org) or call (704) 379-1919 days or (704) 814-9580 evenings.

## CWA Mentor Program

The following members have offered their help to anyone interested in learning skills or new techniques in their area of interest. Contact each person to arrange times to get together if interested.

<b>Name</b>	<b>Area of Interest</b>	<b>Phone</b>	<b>Email</b>
Bill Golden	Shopsmith & Accessories	704.519.6826	<a href="mailto:popstoyshop@juno.com">popstoyshop@juno.com</a>
Dwight Hartsell	Woodturning	704.598.6029	<a href="mailto:woodwight@aol.com">woodwight@aol.com</a>
Wayne Manahan	Sharpening	704.786.0768	<a href="mailto:wmanahan@vnet.net">wmanahan@vnet.net</a>

## Classified Section

**\$\$ For Sale \$\$**

Contact me if you have any tools, wood or services for sale. This section is offered for free.

### For Sale:

8/4 walnut 6' select + 100 BF 4.50/bf  
5/4 ash 6' select + 400 BF 2.25/bf  
4/4 Lyptus #1 common and better 200 bf 2.50/bf  
4/4 Cherry select + 200bf 4-8" widths 3.50/bf  
4/4 Cherry FAS 100 bf 8"+ 70-80% red 4.50/bf  
4/4 walnut select + 100 4-8" very little sap 3.50/bf

LARGE Silver Maple slabs 30" wide, 2" thick 7-8 feet long 275.00/slab

LARGE CLARO walnut slabs 30"-48" wide 2+ inches thick \$10/bf  
great color, excellent figure. Most are crotch.

Lots of other slabs including Big Leaf Maple, Black Walnut and Cherry.

CLARO Lumber taking preorders for 6"+ FAS 6-8/BF will be sawing and drying in the next few months taking pre-orders for up to 3000 bf.

1000's of bf of 8/4 walnut and cherry material air drying.

Quartersawn red oak and CURLY red oak now drying approximately 400/bf  
Qsawn red is FAS and sells for 4.00/bf the Curly Rd Oak is 5.00/bf and some is q-sawn as well.

BOWL BLANKS- Many sizes will cut to custom sizes. Claro walnut, Big Leaf Maple, Black Walnut, Cherry. Will be harvesting some boxelder and other special woods in the coming months.

CUSTOM SAWING also available.

Kyle Edwards, Proprietor  
Edwards Custom Sawmilling & Lumber  
<http://www.sawmillnc.com>  
[kedwards@sawmillnc.com](mailto:kedwards@sawmillnc.com)  
704-258-8985

## **Five Rules of Sanding Turned Projects (These rules can apply to flat work as well)**

Sanding is important. It is the second of the three steps in the turning process - turning, sanding, and finishing. These steps are not independent. A poorly turned surface will require more time sanding, and a poorly sanded surface will result in a poor final finish. We are usually overwhelmed with information on turning tools and finishing products. Everyone wants to know about the latest tools and techniques, or the merits of various finishing products and which ones will give them "the perfect finish". But nobody wants to hear about sanding, and very little is ever published about it. In fact, it is more important than the finishing because the final finish will only be as good as the surface on which it is applied.

### **Sandpaper, The Tool**

We can't discuss sanding without some knowledge about sandpaper (or cloth). The commonly used abrasives can be listed in the order of their hardness, sharpness, and durability: Ceramics, Aluminum Oxide, Silicone Carbide, and Garnet. Aluminum Oxide will remove wood faster than Garnet because it is harder and sharper, making a deep V-grooved scratch pattern on the surface, while the softer Garnet wears faster and leaves a pattern of shallow U-shaped grooves. It makes sense to start sanding with Aluminum Oxide and finish with Garnet.

Don't buy cheap sandpaper. The grit designations of sandpaper do not represent a uniform fixed particle size. Rather, they are a range of particle sizes; with the majority of them being the stated size. The number and size of the particles that are different from that designated depends on the equipment and the quality specifications of the abrasive manufacturer. Unless you have access to their product specifications, you have to rely on either price or experience to determine quality. Cheap sandpaper isn't necessarily a bargain because it usually has a broader range of particle sizes within a designated grit size, and it is the big ones that you don't want because they leave deep scratches.

### **The Five Rules of Sanding**

Everything about sanding can be reduced to "The Five Rules of Sanding". These rules will shorten the time between laying down the turning tool and realizing a museum quality finish. Since sanding can't be ignored, you can try to make it an easier task. Two prerequisites to sanding should be obvious. You can't see in the dark, and you can't work when you can't breathe. Always use a bright incandescent light, the brighter the better, while sanding so that the scratch pattern on the wood surface is clearly visible. Fluorescent light has no shadows, and the surface texture can be almost invisible. Always wear a dust mask while sanding, or better yet, use both a dust mask and a dust collector.

**Rule 1 - Sandpaper is a cutting tool, keep it sharp and keep it clean.**

Throw it away when it gets dull. Don't use worn-out coarse grit as a substitute for finer grit. Worn-out 120-grit is just that, and it cannot be used as a substitute for 280-grit. The spaces between the grit particles are like the gullets of a saw blade. The grit can't remove wood when the spaces are full. Clean both sheet and disc abrasives with a block of crepe rubber. (Yes, it works on sheet when you lay it on a flat surface and rub the rubber block across it). Some turners glue a piece of rubber to a block of wood that is then attached to their lathe. Blocks of natural colored crepe rubber are available through most of the woodworking catalogs, a \$10.00 purchase that will last for years. Do not use colored rubber, white rubber, or any caulking materials because they contain dyes and silicones that can interfere with many finishes.

**Rule 2 - Refine the shape, remove all tool damage and torn grain, and repair the surface with as coarse an abrasive as necessary to do the job - BEFORE moving through the finer grits...**

The only purpose for all subsequent sanding with finer abrasives should be to refine and remove the scratch pattern made by the coarsest paper. If there is torn grain or other tool damage on the surface, go straight to a 60-grit, and don't fool around with anything finer. It makes no sense to brag about never using anything coarser than 180-grit, and then spend two hours to do the same job that could have done in ten minutes with 60-grit. The finer grit can be used, and for a shorter time, when you have improved your tool handling skills during the turning phase of your work.

**Rule 3 - Sand through all of the progressively finer grits without skipping any of them, and don't quit before 320.**

Start with 60 or 80, and proceed through 100, 120, 150, 180, 220, 250, 280, 320, and stop at 400, using whatever combination of power and/or hand-sanding that is appropriate to the task. It is much faster to use all of the abrasive grits in the smallest increments possible, than to make large jumps in grit size. This is particularly true at the coarse end of the scale. Of course, you could go directly from 60 to 320 grit if you had a lot of time and sandpaper to waste.

**Rule 4 - Remove all of the scratches and the sanding dust from the previous grit before going to the next finer grit.**

This step is faster when Rule 3 is also observed.

**Rule 5 - Slow is good, and slower is even better.**

There is a universal tendency to sand too fast. Heat is the enemy. Keep the sanding medium cool by sanding slowly. And, the slower moving abrasive will remove more material than one that quickly "skates" across the wood surface.

Don't spin the piece in the lathe so fast that the paper gets hot. If it burns your fingers, it is also burning the wood surface, and case-hardening rather than cutting it. We have all experienced the situation where the sandpaper quit cutting, and it took a coarser grade to break through the surface glaze, only to have the same problem when you used the finer sandpaper. When this happens, slow down. Sand with a maximum lathe speed of 250 RPM for most work.

It is very easy to generate too much heat when power sanding because you have no direct touch with the abrasive. Heat will clog the disc, and destroy either the cloth backing or the sponge rubber on the arbor. Just because you have an electric drill with a top speed of 2400 RPM doesn't mean that wide-open is the best speed for sanding.

The slower speed will remove more wood faster, the disc is easier to control, there is very little airborne dust, and the sanding discs will last longer.

There are many woodturners who will argue that running the disc sander at a high speed while the work is spinning slowly in the lathe, rather than both at a high speed, is the best way to go. To them I say, try running both at a lower speed and see if the sanding isn't just as fast and easier to control. Two other benefits will be less airborne dust and the sanding discs will last longer.

## **A "Deft" Finish Applied on the Lathe**

This is a true low-to-no gloss finish that can be use on nearly all of turnings. It can be used either "as is," or as a base for a Tung-varnish-turpentine blend. Yes, they are all compatible, and everything is available at the local Home Depot, etc. The finish can also be applied on the bench, but you will have to rub harder and faster.

### **Three Secrets To A Good Finish**

1. The 1st Secret: There is no such thing as a "quick finish."

This one is no exception. While the Deft lacquer is quickly applied, the surface sanding and preparation will take a considerable amount of time.

2. The 2nd Secret: The more you sand, the more you need to sand.

As the surface becomes smoother, the smaller the scratches and blemishes that you can see.

3. The 3rd Secret: The entire surface must have the same preparation and finish.

Once a sanding and finishing sequence has been established, all of the steps must be repeated whenever you go back to a coarser grit to make a surface repair. If any steps in the sequence are skipped, that area will stand out after the final finish is applied because its texture and absorbency are different.

### **THE 8 STEPS TO A "DEFT" FINISH**

The following steps for finishing are described as being done with the work being mounted on the lathe. The same steps are followed for finishing the piece off the lathe; you will just have to rub faster to achieve the same results.

1. Thoroughly sand all surfaces using any combination of power and hand sanding. Don't skip any grits. Power sand with a 3" disc on outside and a 2" disc on inside curves using 80, 120, 180, 220, 280, and 320 grits, always cleaning and checking the surface before moving to the next finer grit. Then, with the lathe off, hand sand with 320 grit to remove any remaining sanding scratches from the coarser grits.
2. Apply and leave a heavy coat of Watco Liquid Finishing Wax to accent and slightly raise the grain. It also accents any surface flaws.
3. Hand-sand with 400-grit wet/dry, with the lathe OFF, while the wax is still wet. Wipe the surface clean. Continue rubbing until any residual wax has dried. Running the lathe helps.
4. With the lathe at 500RPM; burnish the surface with a piece of grocery bag paper.

5. With the lathe OFF; apply a full sloppy coat of Deft® semi-gloss lacquer. Use a soft mop-brush (see Craft Supplies catalog) and sometimes a paper towel. Gloss could also be used, but you may prefer the semi-gloss because its solids seem to act as a fine grain filler.
6. Wait about one (1) minute, rotating the lathe occasionally by hand. Then remove all of the Deft® with soft paper towels, changing as they become wet and sticky. If the surface starts to dry, dampen a towel with some thinner and continue rubbing.
7. With the lathe running at 500 RPM; burnish the surface with a clean paper towel. Generating a little heat helps melt and flow the lacquer onto the surface. The finish will now be dry.

Then, with the lathe OFF, lightly buff the surface with a gray ScotchBrite® pad, fine Bronze Wool, or 0000-steel wool to remove any traces of dried lacquer and circular marks from the surface. You may prefer to use Bronze Wool because it cuts better, leaves a smooth scratch-free finish, doesn't stain light colored woods, and is totally oil-free. If this will be the final finish, we can apply a second coat by repeating Steps 5 through 7. Just don't wait before wiping the surface in Step 6.

For a bit more gloss, the surface can be polished with Rottenstone, applied with Lemon Oil or thinner Mineral Oil and a felt pad. Lemon Oil polish is lemon scented mineral oil. Clean and polish with a soft cloth (old T-shirts are perfect).

8. Apply 2 coats of a good quality paste finishing wax. Trewax® may be used because it is durable, polishes easily, and fairly resistant to water spotting - all at a reasonable cost.

The piece is finished. Remove it from the lathe and finish the bottom.

## **Finishes for Pens, Watches and Small Personal Items**

Various sources have described the "best" finish as a friction polish, such as lacquer, shellac, CA glue, epoxy, and other materials. All will look good when new, and some will wear longer than others, but all will succumb to the wear and contact with perspiration and body acids from daily use. Some of these finishes may outlast the 24k plating on the fittings, but none will outlast the Titanium-Gold plating on the premium pen fittings.

Consider that the best finish for these personal items may be none at all. The natural wood will develop a patina and a polished oil finish from use and exposure to our body oils. The finish will never wear away; instead, it is maintained and enhanced by daily use and handling. Try using Perfect Pen Polish (PPP)® by Hut Products as a temporary protection on a highly polished natural wood surface. The finish is removed by wear and replaced with body oils after a short time of regular use, and the transition is unnoticeable.

### **Finishing Naturally**

Turn and sand the pen barrels as described by the parts suppliers' literature, but sand through at least 1500-grit. Sand dry to 320, and then wet sand with the finer grits up to 2000-grit, using Watco® Liquid Finishing Wax as a lubricant. Then burnish the wood until the wax is dry with a piece of grocery-bag paper (2500-grit). Any good quality finishing wax can be used instead of the Watco® product.

The Perfect Pen Polish (PPP) is then applied as directed on the package with the lathe running at full speed. You will now have a highly polished natural wood surface that has a temporary wax protection. It may not have the most surface gloss now, but it will be the best looking after several months of daily use.

### **Hardening The Wood With CA Glue**

Soft, porous, or cracked wood can be hardened and stabilized with thin CA glue after dry sanding with 320-grit. An applicator for the CA can be made by covering a strip of 1" masking tape about 1½" long with synthetic batting (available in any sewing supply store). Then wrap another piece of tape around the center, leaving a ¾" long applicator on either side of the tape handle. The batting material has no reaction with the CA glue, while the cellulose in either paper towel or cotton cloth acts as an accelerator. Then resume sanding with either 280 or 320 to remove all of the CA on the wood surface because it is being used as a filler, not as a finish.

### **Plastic Pen Barrels**

There are many acetate and acrylic materials, such as crushed Velvet, available for turning pen barrels. These plastic materials require somewhat different turning and finishing techniques from wood because of their low melting temperatures. It is an absolute requirement that NO heat can be generated during the turning, sanding, or finishing of plastics. Judging from the poor quality of finish that is often seen on these materials, many turners are not aware of this difference between wood and plastic.

Use a very sharp tool for turning, and watch the chips that are being formed. The chip should curl off the tool in a continuous flowing unbroken ribbon. If it is breaking up into little balls, the plastic is getting too hot in the cutting area and it is melting. Use a slower lathe speed or take a lighter cut with a tool that is honed to a keener edge. Sometimes both are needed. If the problem persists, wipe the surface with a little kerosene before turning each pass. The smoke that is generated will prove that the kerosene is doing its job.

### **Sanding Plastic**

Wet-sand the barrel, using kerosene as the lubricant, at a medium lathe speed no faster than about 600 RPM. Finish with 600 grit. Then run the lathe a bit faster, but not over 1200 RPM, and wet-sand with Crocus Cloth, again lubricated with kerosene. Keep the surface very wet to prevent any heat from ruining the surface finish. Crocus Cloth has a 1200-grit jeweler's rouge abrasive on a cloth backing. Wipe the surface clean. If it isn't highly polished, or it has circular sanding-type rings, the surface got too hot. Start over at a slower lathe speed, and use more kerosene.

Wax is an optional step to give some temporary protection to the surface. If you wish to use a stick-wax product, use only the white (or light colored) PPP by Hut Products. The dark wax has abrasives that aren't needed after using the crocus cloth. DO NOT use a hard carnauba wax stick such as Libron, regular Hut, etc. They are too hard and their melting temperature is so high that they can melt and "drag" the plastic surface before they start to flow. The PPP has a lower melting temperature that will not damage the plastic. Cocobolo and Ebony woods respond very well to the same sanding and finishing treatment as the plastic.

### **An Alternate Finish**

One of the shellac based friction polishes can be used for a higher gloss and a more durable finish. It will wear longer than the wax, but it will still be removed by wear and exposure to body oils and acids. Therefore it is still necessary to sand the wood to the same high polish as described.

A favorite of these finishes is Shellawax, but there are similar products by Mylands, Hut, Penn State, and

others. Remember to use a small amount and at a high lathe speed as described in Section 10 - Friction Polishes.

### **CA Glue As A Finish**

This finishing requires a slow acting CA glue, and the slower the better. Most of the "thick" varieties with a cure time of 1-minute will work. The application of the finish is quick and simple, and takes about as long as it takes the CA glue to cure. Using a faster glue requires a faster reaction on our part and increases the risk of permanently attaching the pen barrel to the mandrel (a risk whenever using CA glue on a pen).

Sand the pen to at least 600-grit, and wipe it clean with a clean paper towel.

Apply a liberal coat of the "Thick" CA Glue. Make sure it is a uniform coat that covers the entire pen.

Immediately apply a liberal coat of Boiled Linseed Oil.

Increase the lathe speed and buff the finish with the wet rag that was used to apply the Linseed Oil.

When the danger of slinging the finish in your face has passed, increase the lathe speed to as fast as it will go, and buff the finish with a clean towel until it is dry.

The result will be a awesome gloss that will last longer than anything else that you can put on the wood. However, like all good things, there is a price to pay for the gloss and durability. This is a CA glue finish and it will have the appearance of being a plastic, and it will wear like a plastic rather than like a wood. The gloss finish on a plastic will become dull from the tiny scratches that are made on its surface from use and wear, while wood has the unique ability to take on a more polished patina when exposed to the same conditions.

### **Using Wipe-On Varnishes and Oils**

A wipe-on varnish is an ideal finish for the woodturner. It is easy to apply, very forgiving, easy to repair, and gives the wood a durable protective film that is not easily damaged by water, food acids, body oils, or solvents. The only negative to using varnish as a wipe-on finish is the time that is required to build a high gloss surface film. The "blotchy" discoloration associated with varnish and oils is eliminated with the use of a sealer before the application. Discoloration, darkening and yellowing with age are the result of the resins and oils that are used, and this can be corrected to a large degree with selection of the varnish resins and oils that you use.

As a straight oil finish, Tung Oil develops a hard surface that is waterproof, doesn't darken or turn yellow with age, and doesn't discolor the wood. But, it doesn't penetrate the surface very well, it takes forever to dry, and is more expensive than other oils. Partially polymerized Tung Oils solve the drying problem, and thinners can improve its penetration. However, these products are expensive and can cost as much as \$30.00 for a quart. Linseed, soybean, and other vegetable oils offer faster drying and better penetration, but they also turn very dark with age, many become rancid, they are not as durable, and they must be periodically renewed. They are also are far less expensive than Tung Oil.

### **The Varnishes -- A Very Brief Summary**

There are four types of varnish - alkyd, polyurethane, spar, and quick-drying. Any of these varnishes can be substituted whenever I mention "varnish" in this discussion.

Alkyds are the traditional varnishes made from a polyester resin. For a crude reference, think of polyester as the resin that is used in Fiberglass®. These varnishes are durable, flexible, resistance to abrasion, have good adhesion qualities, resistant to discoloration from UV and light, and are relatively less expensive than the other varnishes. Their only negative is that they are very slow drying and will take 24-hours to dry sufficiently for recoating. For this reason alone, the alkyd varnishes are becoming difficult to find as a furniture finish, but their superior qualities make them the choice for floor finishing varnishes.

Polyurethane resins have replaced the alkyds for only one reason - they dry and cure faster. They are also more water resistant. But, several of the benefits of the alkyds have been sacrificed. Polyurethane varnishes are not light and UV resistant, and therefore will turn "yellow" rather quickly. They can also have adhesion problems with themselves and other finishes..

Spar varnish is a formulation of phenolic and alkyd resins in Tung Oil. Another crude comparison would liken phenolic resin to Bakelite®, waterproof, and very hard. Spar varnish is a relatively hard finish with superior water resistance and flexibility. It has a good resistance to damage from either acid or alkali substances or deterioration from light and UV. Unfortunately, it is very slow drying and it has a naturally deep yellow color.

Fast-drying, or VT, varnishes have been modified with styrene resins to produce a very fast drying time that is similar to that of a nitrocellulose lacquer. This speed comes with the sacrifice of the protective properties found in the other varnishes.

### **Which Varnish?**

It should be obvious from a comparison of the properties of the various varnishes that you should be using either alkyd or spar for your woodturnings. Either will offer the flexibility to move with the wood as it changes with seasonal moisture changes, and provide the durable surface protection required for an item that will see frequent handling over a period of many years. Although I have preferred the alkyd varnishes for many years, it has become difficult to find as a furniture finishing product. However, it is readily available as a floor finish, but usually in nothing less than a 1-gallon container. I started using spar several years ago because it was easier to find. I have not found it to be superior to the alkyd as a finish for turned wood.

Many woodturners prefer the higher gloss from fewer coats and faster drying of the polyurethane varnishes. I don't use them because I don't like their plastic appearance. They may be faster drying, but adhesion can be a problem, and they turn yellow and deteriorate with age and exposure to light. The manufacturers have added a variety of ingredients in an attempt to solve these problems, but they have only succeeded in reducing them while increasing their cost.

### **Gel Finishes**

These finishes have been promoted as "the answer" to our wood finishing problems. Gel finishes are the polyurethane varnish resins without the liquid solvents. These are the solids that will settle to the bottom of a can of poly-varnish. These finishes will give a more uniform surface coloring because they do not penetrate as deeply into the end grain as the liquid varnishes. Other than that, they have all of the same characteristics associated with any other polyurethane varnish. Bartley's and General Finishes are the most recognized brand names.

### **Wipe-On Varnish Finishes**

Your preference should be a varnish based finish that can be applied with either a rag or a paper towel, rather than by a brushing or spray application. Any varnish can be used as a wipe-on finish with the addition of 50% thinner. The addition of oil will help it flow out into a thin uniform coat. The amount of oil will influence the

flexibility of the final surface finish and the drying time of the finish, more oil is more flexible and takes longer to dry. If too much oil is used the finish will be soft.

The quantity of oil in the finish is often referred to as being a long, short, or medium oil finish. Commercial varnishes as they come from the can are a "medium oil" varnish with about 50% oil. A typical wiping varnish is a "very long oil" varnish with 75% oil.

### **Commercial Oil/Varnish Products**

Regardless of their advertising claims, all of these commercial finishes are the same - a mixture of varnish resins, some type of oil, and thinner. Danish oil doesn't have the varnish resins. Most manufacturers have sacrificed finish quality for a product that is easy to use and fast drying. Most of them have added metallic drying agents to increase their cure time, and compensate for vegetable oils that are not a natural "drying oil". All of them contain a very large amount of thinner and a relatively small quantity of varnish and oil.

Although the manufacturers recognize the superior qualities of Tung Oil in a finish, many do not contain any Tung Oil at all. Regardless of their labeling, "Tung Oil Finish" has become a generic term for any oil finish. There have been claims from other woodworkers that some of these do contain Tung Oil, but absent any list of ingredients on the label, you can only assume that they do not. There is nothing wrong with these products if they will produce an acceptable finish for you. I object to the false advertising and labeling, and prefer to not use anything with "secret" ingredients.

I can recommend the following commercial products on the basis of personal experience. There may be others in the marketplace that just as good, but I have yet to find them.

Daly's Sea-Fin Teak Oil<sup>®</sup> is a Tung Oil finish that is widely available in the Northwest. In recent years their distribution has increased, so it may be available in other areas. In my opinion, it is the best of the commercial wipe-on products. It is easy to get a good finish when the directions printed on the label are followed.

Waterlox<sup>®</sup> is a nationally available Tung Oil product that is similar to Sea-Fin. It is generally available only through the mail-order catalogs. It is available as either the "Original" or as a "Marine" finish. Other than the "Marine" costing \$10 more per gallon, I have never found any difference between them. Buy the "Original" because it is cheaper.

Gillespie's Tung Oil Finish<sup>®</sup> is an excellent Tung Oil finish that is not quite as good as Sea-Fin or Waterlox, but it is usually available at most paint specialty stores, Home Depot, Lowe's, and similar retailers. stores.

Hope's Tung Oil Finish<sup>®</sup> is an excellent product but it is difficult to find, and sometimes the stock was very old. If you can locate fresh stock, try it. You will be pleased with the results.

Watco<sup>®</sup> Teak Oil Finish, in the can with the blue label. While it is a Linseed Oil finish with UV inhibitors added, its finishing properties are considerably different from the more familiar Watco Danish Oil in the can with the brown label. If you have sworn-off on Watco<sup>®</sup> products because of things you have heard, or have had bad experiences with them, then try this one. I think that you will like it. Even the Danish Oil has improved since ownership by Flecto has returned it to its original formula.

### **Danish Oil**

There are several products sold under the name "Danish Oil". The most common is the Watco<sup>®</sup> product in the brown can, but there are other similar products available. These are an oil (only) finish that is made from linseed, soybean, and other oils, a lot of thinner, and no varnish resins. Since they contain no varnish resins,

Danish Oils will not build a surface film, and any film that will form is incidental to the amount of linseed oil that is present.

While Danish Oils are fast and easy to apply and have many other uses for our finishing, they are not a good final finish for our turned wood. The finish is soft, not very durable, and will require rejuvenation every couple years when exposed to even indirect sunlight.

It is interesting to note that there is nothing "Danish" in these finishes. They are an oil finish that was marketed as a way for us to duplicate the finish on the "Danish Modern" furniture style that was popular at the time, which was a lacquer.

### **Home-Brew Oil/Varnish Finish**

I mix my own oil/varnish because I have control of the ingredients, it is always fresh, and it is less expensive to use than commercial products that contain less than 20% finishing solids. \$35.00 a gallon is a lot to pay for something that is 80% mineral spirits or other thinners. My opinion may be somewhat biased because I learned to mix my own finishes before any of the commercial mixtures were available.

I use a mixture of equal parts 100% pure Tung Oil, Varnish, and Turpentine. The proportions aren't critical. If there is any error in the proportions, it should be towards a lesser amount of oil, and a greater quantity of thinner. Additional oil will improve its wiping properties, but it will also increase its drying time.

In my opinion, McCloskey's "Man'O War" Gloss Spar Varnish (in the red can) is the best varnish on the market for turned wood. It has all of the benefits of a spar varnish because of its Tung Oil, phenolic, and alkyd resins. Its only disadvantage is that it is more expensive than other varnishes. I have always preferred the traditional alkyd varnishes for furniture and turned wood, but they are getting difficult to find, and I have limited experience with the floor finishes mentioned earlier.

Pure Gum Spirits of Turpentine are used for the thinner because the natural oils become a part of the finish and enhance the qualities of the varnish. Other thinners do not become a part of the finish. Turpentine substitutes are nothing more than an expensive form of Mineral Spirits (paint thinner) that evaporates more slowly.

Either 1-K kerosene, VM&P Naptha, or Mineral Spirits can be substituted for the turpentine. Naptha dries faster than Turpentine, Kerosene dries slower and mineral spirits dries only slightly faster, but also gives the mixture a shorter shelf life. None of them impart anything to the finish. The new odorless Mineral Spirits is not "odorless" and it is more expensive.

I use whatever good quality 100% Tung Oil is available at the local paint store because I like to inspect the cans for signs of aging before buying. Old Master's<sup>®</sup> and Hope's<sup>®</sup> are the brands usually available, and both are good quality. Boiled Linseed Oil can be used, but the resulting finish is softer and it will become darker faster than with Tung Oil. Changing the oil that is used to a 50/50 mixture of Tung Oil and Boiled Linseed Oil seems to better enhance the grain in highly figured wood such as Maple.

### **Wipe-On Application**

The wipe-on, wipe-off, wait, buff with steel-wool, and repeat, application is familiar to nearly all woodturners who have ever used a commercial finishing product such as Watco Danish Oil.

For wipe-on application, a "finishing-ball" is easier to use than a paper towel, and it doesn't fall apart. Prepare the ball by making a golf ball sized wad of cheesecloth, and then wrapping it in a 6" square of cotton cloth. A

sheet of paper towel that has been folded into as small a square as possible can substitute for the cheesecloth.

A paper towel works well for small projects, and Viva is the softest and most lint free that I have used. I fold the towel twice in the long direction, and then roll it as tight as possible to make an applicator that will keep my fingers out of the finish.

The directions for application are simple:

Apply a heavy coat of finish and keep it wet for several minutes. Sand the first coat with 400-grit wet-dry, and the second with 600-grit, to form a slurry that will act as a grain filler. Add more finish as it starts to dry. Sanding is omitted after the second coat.

Wait a few minutes until it becomes tacky.

Remove all of the finish with a soft cloth or paper towel.

Wait overnight.

Buff it back with steel wool

Repeat Steps 1 through 5 as many times as required to achieve the desired gloss. I apply as many coats as needed to leave a glossy finish after waiting overnight, 5 or 6 depending on the wood, and then add one more.

### **Wet Sanding Application**

An alternative application is sanding with wet/dry paper while the piece is spinning on the lathe, using the finish as the lubricant. I dry-sand through about 150-grit, and then wet-sand starting at 180-grit and continue through 600-grit. Wipe the slurry from the wood surface before going on to the next finer grade. When you are done sanding you are done finishing. Let it dry overnight and buff with steel wool.

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Next Meeting:

June 20, 2006

At the Incarnation Lutheran Church

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