

Alternative Title: What the advertisers, manufacturers and retailers don't want you to know.

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Discussion and Techniques

Charles Neil began by asking "what is wanted in a finish?" He discussed many of the products that have traditionally been used and found wanting such as mineral oil and boiled linseed oil.

Current products on the market vary in properties – particularly in the length of time it takes for them to dry and harden. The types of resins and dryers in the finish and the expense of these components drive manufacturers to make different decisions. Watco's Danish Oil is a popular finish but it takes too long to dry and harden for use in the rapid production environment of a professional woodworking shop.

In his experience, he has found products from General Finishes to be particularly good. Not only are they easy to use, they are fast to dry. He demonstrated with Enduro Var on a spalted bowl. Traditional oil based products like Seal-A-Cell and Arm-R-Seal have been on the market for years. They have urethane and alkyd resins and dryers that build a nice protective finish quickly. You can dilute Arm-R-Seal with 20% naphtha or mineral spirits to get a penetrating first coat like Seal-A-Cell. More recently water based products like Polyacryl have been introduced. They have a milk like appearance that does not produce warm tones in the wood like the oil based finishes do. The new water based Enduro Var has an amber tone that warms the wood and is faster drying than Polyacryl. A water based friction finish is due out soon from General Finishes.

With any type of finish a satin sheen is most preferred because of its luster and it doesn't show fingerprints. You can get any sheen you want but you must have enough finish on the wood to provide a continuous surface after you have completed sanding and buffing. The build up of

protective layers is an important step for a good-looking piece of work. What counts is how much resin is left behind.

Mr. Neil demonstrated the importance of a thick coating by passing around an end turned platter and end turned bowl made from box elder wood. End turned wood objects tend to crack and split but these had been coated with a two part pour-on system (EnviroTex Lite) to stabilize them. After two years they were still intact. Coat both the inside and outside of hollow forms to stabilize them.

Improving wood color with stains and dyes are a necessary part of the finishing process. Stains need mixing because the pigments in them tend to settle out. Dyes are a solution that doesn't need mixing. A good way of finding out what you have in a can is the following: Open the can and put a stick in it right to the bottom. Lift the stick out of the can. If the stick comes out with clear liquid and goop on the bottom you have a stain. If the stick comes out colored and with goop on the bottom you have a mixture of stain and dye. If the stick is colored with no goop you have a dye. Stains tend to act like BBs in a finish. Results depend on their size and thickness on the surface. Dyes penetrate quickly and attach to the wood fibers.

Shellac is a unique finish that has been around for a long time. Lac bugs secrete and deposit the resin on twigs and branches of certain trees in India and southeast Asia. Collected and refined it is sold as flakes (add alcohol to make the liquid) or as liquid and has unique sealing properties. It can be wiped, brushed, or sprayed. Spraying is the preferred application if you have the equipment and facilities. Mr. Neil demonstrated how shellac works by coating a cedar platter and sealing it. Shellac provides a super quick finish. Each coat melds into the preceding one. While shellac is not particularly durable (water spots it and alcohol removes it), it does accept water based topcoats like Enduro Var nicely. Shellac works well on wet wood. Do not put shellac over oil based finishes because it tends to curdle. Renaissance Wax applied over a wet shellac surface produces a super finish after buffing.

To finish a piece on a lathe, start with sandpaper lubricated with water, coffee, or water with a little dishwashing detergent. Use increasingly finer grits - #500, #1000, #2000, #3000, #4000 to get the sheen you want. #2000 for low satin to #4000 for a near gloss.

Demonstrations

End turned large (12" diameter) box elder platter and bowl coated with Envirotex Lite

End turned wooden objects usually warp, crack and split apart unless great care is taken when they dry. In this case a two part pour-on finish was used to surround the wood. The first coat was thinned to the consistency of milk with 20-40% acetone to promote penetration into the wood. It was applied liberally and wiped smooth a little later. Several coats were used and let harden to prevent distortion. The thickness and stability of the finish protected the wood and stabilized the platter and bowl. While defects were still in the wood, the platter and bowl were stable two plus years after they were turned and finished. This finish also preserved the unique colors in box elder – the reds and whites were not diminished by time. Tenons were left on both to allow further finishing on a lathe.

Charlie Galambos' spalted bowl

Charles Neil used Enduro Var and wiped a good coat onto the spalted bowl. After 5 to 10 minutes he passed it around to show that the first coat was dry. He added a second coat and after a few minutes passed it around again to show that it was dry. After the third coat was dry, Roger Chandler got the chance to sand it smooth. Charles Neil amended Roger's work and passed the bowl for all to see the results. The partially finished bowl remained a work in progress. Charles Neil noted that the Enduro Var stiffened up punky areas in the spalting providing a good substrate for final sanding and buffing.

Don Voas' cedar platter coated with shellac

Charles Neil showed how one coat of shellac effectively sealed the knot and defects in the cedar platter. Additional coats were added to stabilize front and back and create enough thickness to protect the piece. Additional coats of finish are needed to build up enough thickness for final surface treatment including buffing.

Roger Chandler's finished hollowform

Roger had finished his hollow form but was unhappy with nibs and other blemishes in the finish. Charles Neil jamb chucked it on the lathe

and showed how to use progressive grades of sandpaper or Abralon pads to smooth the surface. Initially, Charles found the finish had not set up hard. He used coffee as a lubricant/cleaning compound (better is dishwashing detergent with water) to make the abrasives more effective. Starting with #500 Abralon and moving through #1000 and #2000 he brought the surface to a luster and then with #4000 made it glow silky smooth (according to the smile on Pete Johnson's face).

Bill Millet's 3 corner bowl

Charles Neil used a shellac coating on Bill Millet's bowl. He showed how multiple coats could be applied quickly with the bowl on the lathe. After shellac application, he promoted drying by turning the bowl at high speed on the lathe. A heat gun or hair drier could also be used to accelerate the process. He applied and dried three coats in a few minutes using #600 sandpaper between coats. He applied a fourth coat and when half dry – still goopy – applied Renaissance Wax, turned on the lathe, and buffed up a nice glow with a cotton rag.

Factoids

All clear wood finishes on the market today are food safe. No clear finish that is on the market today is unsafe for food.

Mineral oil has zero percent resin. It just wets wood. It does not protect wood because there is no film.

Mineral oil and boiled linseed oil are cheap and easy to buy but they don't provide much protection or good looking finish.

Shellac is the only finish that, when dry, dissolves in the human body. It is used as a coating for candy and pills. Other finishes won't dissolve in the human body – they just pass through.

All lead based finish dryers have been gone for over 20 years. None are sold today.

Every finish starts as a gloss. Manufacturers use diffused silica to kill gloss for semi-gloss, satin and other sheens.

Use water based finishes to harden up spalted wood. Three to four coats will be needed. Just slop it on and let it dry.

Spanish cedar is used in humidors because of its anti-bacterial properties. It stinks to high heaven and that stink can be controlled with shellac. Other finishes just make the stink worse.

The blackest dye is india ink. By adding some to other black dyes you can kill lavender, greenish and other tints. India ink is good for making Appalachian Ebony but always wear protective gloves.

In using wipe on polyurethane you need something to rub and it must be dry and hard.

Use gel polyurethane to add thickness to overcome blemishes in a finish.

The Bartley line of finishes went out of business.

For water based finishes:

- Ether makes water evaporate quickly
- Glycols bind pigment (BBs) together
- Work well on green turnings
- Surface tension can be broken with 2 tablespoons of alcohol per gallon

A way to think about different types of finishes:

- Alkyd resin – very weather resistant and durable
- Polyurethane – flexible like a tire
- Acrylic – clear, hard like a windshield

To remove excess glue after it hardens, use a heat gun or hair dryer followed by a chisel to pop the glue off. It even works with Titebond III.

To properly finish a piece, you must use ever finer abrasives until you can't see the scratches anymore.

Don't use pumice or rottenstone as a abrasive because it leaves residue in wood grain. It was intended for use on paints and lacquers on smooth surfaces that can be cleaned of residue.

A super fixer for broken corners, splits and defects are the Mohawk epoxy and fillers.

Questions and Answers

Q. What's wrong with using Minwax products?

A. Most of their products are derived from boiled linseed oil that is slow to dry. They don't distinguish between dyes and stains in their products. They control 80 percent of the retail market. Their products stay wet too long for production work. They don't dry quickly.

Q. What is the best finish to pop the grain in wood?

A. Shellac pops the grain best. Coat with a water based finish like Enduro Var to add durability.

Q. How do I keep cedar (or any other wood) white?

A. Use a dewaxed shellac like Zinsser Seal Coat. Spray it on if possible – that will produce a more even surface.

Q. Would Scotchbrite pads work for smoothing finishes?

A. Scotchbrite tends to ride over nibs and other surface blemishes. It does not cut like sandpaper or Abralon abrasive pads. It tends to burnish the piece rather than remove blemishes.

Q. What other finishes are good besides Arm-R-Seal?

A. Waterlox is a good oil. It gives a nice amber hue on cherry.

Materials and Sources

During the talk Charles Neil used or discussed the following:

Shellac 2 pound – source not specified

From General Finishes (<http://www.generalfinishes.com/>) also Craft Supplies, Rockler and Woodcraft.

Seal-A-Cell – oil based

Arm-R-Seal – oil based

Polyacrylic – water based

Enduro Var – water based with amber tone

Pour-on two part finishes like Environmental Tech Envirotex Lite Pour-On Finish available at Michaels, Lowes and also Amazon. (two part polyester)

Zinsser Seal Coat – a 3 pound dewaxed shellac is available from Lowe's.

Renaissance Wax – from Rockler, Craft Supplies, Woodcraft

Watco Danish Oil – local retailers, Woodcraft, Rockler

Waterlox – from Craft Supplies and Woodcraft

Abralon sanding pads – from

<http://mirka-online.com/index.php/mirka-specialty-abrasives/mirka-abralon.html>

or

<http://www.bowlingbeat.com/shop/>

also from Craft Supplies in 3" pads.

Mohawk wood fillers – from http://www.mohawk-finishing.com/catalog_browse.asp?ictNbr=3

General abrasive supplies from Sandy at <http://www.industrialabrasives.com/>

Other References

Finishing: A to Z with Charles Neil
Set of 10 DVDs \$134.99

Book - Understanding Wood Finishing by Bob Flexner, 2005