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American Association of Woodturners
Whether used alone
or over other finishes,
wax is a common and
versatile finish for
turned pieces.

Wax & the Woodturner



By Alan Lacer

Bill Hunter uses a series of buffing wheels charged with compounds before applying carnauba wax to his cocobolo pieces.

I grew up in an age of hand-waxing your car to give a near bulletproof finish: water beaded, sun reflected, rocks bounced off hardly noticed.

So when I came to woodworking, I figured it would be pretty much the same with wax on wood: a strong, tough barrier between the world and my finish or the wood. The problem seems to be that it makes a difference whether it is wood or painted metal beneath the wax. I wonder if it could be that the tough and hard barrier on my car may not have been quite so tough after all?

It is hard to imagine a single finish playing as many roles as wax does in our field. Turners use it to

seal green wood, slow the drying of rough-turned bowls, lubricate cup centers and tool rests, assist sanding of wood and finishes, blend with other finishes for different effects (such as shellac or oil), add color (either overall or just in the pores of the wood), adjust sheen, reduce damage caused by water or grimy hands, minimize scratching, and sometimes serve as the only finish on a piece. But all of this gets ahead of the real story.

Wax benefits

Before choosing wax as a finish, one needs to know the strengths and weaknesses of this material. On the upside, wax:

- Reduces scratching, as it creates

a slick surface.

- Reduces staining and water spotting under some conditions.
- Works well on oily or resinous woods (such as cocobolo, bocote, tulip wood, and ebony), which are difficult to finish.
- Adjusts luster or shine that ranges from flat to an ultra-high gloss.
- As a clear wax, preserves the original color (especially on woods such as holly and hard maple).
- As a colored wax, adds color or special effects.
- Adds one more barrier between the outside world and the wood or the finish.
- Adds a finished look to the wood piece.
- Can be an incredibly fast finish

compared to most other options for finishing wood.

Wax's three strongest benefits are that it is reversible, repairable, and renewable. Because it is easily **reversible**, you can strip it with several solvents, including naphtha, turpentine, xylene, toluene, and mineral spirits (in most cases).

Because wax is **repairable**, you can re-buff or re-wax the surface. There are no bonding questions of the old coat with the new coat because the solvents in a new coating will usually reactivate the previous wax coating.

Because wax is **renewable**, you can re-buff a surface that begins to dull. Or, you can add a new coat to regain the original look.

Ray Key is one of the proponents of lubricating sandpaper with wax. This does several things: reduces sanding dust, makes the paper less aggressive, and reduces scratches.

Wax weaknesses

However, on the downside:



Dark wax on dark wood

Light wax on dark wood

- Even the best waxes don't hold up well to a lot of handling. The softer forms of wax, like beeswax or soft paraffin, smudge easily from handling.

- Even short contact with liquid affects the finish, and worse, water passes readily through the wax into the wood or onto the finish below. Even though there is some resistance to staining, I found that mustard and ink passed through the wax fairly quickly (less than one minute in most cases).

- Strong food items may affect the wax coating.

- Some waxes use "hot" solvents to turn them into paste or solutions. This may be a major problem for water-based finishes or uncured finishes like lacquer.

- Moisture vapors—the source of wood expanding and contracting—pass through a thin wax finish, which does little to slow this exchange. (The thick layer of wax used for green wood is excellent for stopping or greatly retarding moisture exchange.)

Remember that even with these limitations, the finish—if there is one—underneath the wax will probably offer some added protection and even luster. Thus, some of these downsides are not usually catastrophic.

Wax and oil mixes

There is one category of wax mixture that we should single out for a closer look: wax and oil. You'll find many homemade blends promoted and commercial blends marketed: beeswax and cooking oil, paraffin and mineral oil, beeswax and orange oil, beeswax and linseed and/or tung oil, beeswax and walnut oil. Some of these mixtures create soft waxes, with either oils that never dry



To stop moisture loss in turning blocks, turners often purchase blocks with heavy wax coatings. Two forms are melted paraffin and a wax emulsion, such as Anchorseal. When applied thickly, wax is excellent for stopping or greatly reducing moisture exchange. However, in thin layers, wax has limited value in reducing moisture penetration.

(cooking and mineral oil), oils that dry eventually (semi-drying oils like walnut oil), or oils that certainly will dry (tung and linseed oils).

One attribute of the wax-oil blend is a big draw: It gives a soft, silky look and feel to the piece that may be very important for point-of-sale appearances. (Remember that some fruits, vegetables, and candies get waxed—not for taste, but for eye appeal.)

In the case of decorative pieces, the oil and wax mix may achieve a look desired by the turner on a long-term basis. If that's the goal, I recommend using an oil that will eventually dry.

However, the blends I have identified make a soft finish even softer—and the surface even more prone to water spotting and dulling.

If a non-drying oil is applied to a decorative piece, a wonderful "dust catcher" is created. This finish will give the piece a dirty look over time—especially if the wood has large, unfilled pores. On a functional piece like a salad bowl, you may even wash away a non-drying finish or find it is attacked readily by some food items.

If the blend produces the desired look, go for it. Just don't have high expectations for a tough finish. As an alternative, oil a piece, then



Apply stick wax to pieces while still mounted on the lathe. Bill Hunter softens the sheen of a cocobolo piece with 4/0 steel wool.

apply wax over it.

Apply wax— count the ways

From a woodturner's standpoint, there are a number of methods to apply wax and buff a waxed piece.

One of the more common ones is to apply a liquid, paste, or stick wax directly onto the piece while still on the lathe. If it is a paste or liquid, wait until the solvent has evaporated sufficiently (sometimes this is expressed in minutes on the product container) and buff away with a soft cloth.

For a stick wax, there is no waiting time—the friction of holding the wax against the piece softens it sufficiently to spread over the piece. Buffing with a soft shop paper towel works for me.

Another option is to charge a buffing wheel with a wax (usually in stick form). In this case, hold the turning and travel over its surface with the waxed wheel. You can also coat a turning off the lathe with a liquid or paste wax, then buff out the finish on a dry buffing wheel (not charged with wax).

One of the most basic methods is to hand apply wax off the lathe and buff by hand with a soft cloth. Although this is an excellent method, it doesn't produce an ultra-high sheen (if desired).

A more unusual method is to immerse thin turnings into a bath of melted wax, a method Del Stubbs embraced. To follow Del's method, soak pieces a short time in melted beeswax in a crockery cooker, then dab off the surface as you lift pieces from the wax bath. This does several things: It gives the pieces a soft, low-sheen finish. And because it essentially plasticizes the thin pieces with wax, it adds to the durability of such delicate work.

Some turners who make duck calls use the dipping technique.

Mix your own blends

If you are into a little kitchen science and the control that comes with mixing your own finishes, wax is a good place to begin.

You can create your own blends of different waxes, decide if you want to create a stick form or a paste form, determine the softness

of paste or stick (or dried wax if a blend), control the type of solvent that puts your wax into a mix, and decide what color you wish the wax to be.

There are so many commercial varieties available that the option of mixing your own blend is less and less common. But don't let that deter you if you are drawn to the reasons cited.

Mixing your own blends or forms of wax usually involves heat and potentially very flammable materials (solvents especially, but even some



You can easily tint small batches of wax by first melting wax shavings in a bath of hot water, as shown above. Then, blend in tinting bases to add color before cooling the mixture. Mixol, a universal tinting base manufactured in Germany, is available in 20ml bottles from Woodcraft and other woodturning suppliers.



Thin pieces dipped in melted beeswax increase strength and produce a low luster.

waxes). The best advice is to put your container into a hot water bath. All of the common waxes melt below 180°F.

If you go for the first option, place the container holding the wax and solvent (if any—not necessary at all in creating your own blend of stick wax) inside another container so the heat is diffused before contacting the container holding the wax and solvent.

A centuries-old finish is a mix of shaved beeswax and turpentine. For a small batch, try 2 ounces (by weight) of beeswax and 3 tablespoons of turpentine. Heat it slowly to liquefy the mixture, stir to get an even mix, then let cool.

If you are patient, the turpentine will dissolve the beeswax without heat—it is just slower and requires more stirring to get an even blend. The amount of turpentine determines the softness of the mixture. If the mix is too thin for your liking, reheat with more wax; if it's too thick of a paste, reheat with more turpentine.

The application is like any other paste wax: Spread over the

workpiece, allow the turpentine to dry, and then buff. It's more or less a standard paste wax, but you control several variables. You can add shaved pure carnauba (usually considered to be a premium natural wax, but very hard and even a bit brittle compared to beeswax) into this mix to alter properties of sheen, hardness, and color. For a faster drying period, experiment with other solvents like mineral spirits, naphtha, or toluene. Some of the solvents may be harsh on uncured or water-based finishes below the wax—always perform a test sample before applying to the work.

How do you choose a wax?

How do you choose? I can tell you it is not by cost alone, as some of the least expensive waxes perform as



What is this stuff?

What is wax? You could say it is a fatty, oily substance with water-resistant properties that is solid at room temperatures. The origin of the English word wax referred to the material used to create the storage chambers for honey and brood in a beehive—hence the notion of beeswax. In practice, wax can be derived from the animal world: bees, lac bugs (source of shellac), other insects (used to produce Chinese wax), sheep's wool, and whales (for spermaceti). From the plant world: tropical plants (like the palm leaves used for carnauba), desert plants (for candelilla), the cuticle covering of leaves, or orange and lemon peels.

Even the mineral world yields wax as found in some forms of coal and minerals (montan and ceresin waxes which are actually fossilized vegetable wax), and certainly in petroleum (paraffin and microcrystalline, which started as organic plant and animal material). Today, there are numerous synthetic waxes with a multitude of applications—sometimes as a coating for wood.

As a woodturner considering wax as a finishing material, our options are not really so overwhelming. It comes in liquid, paste, and solid stick form. The most common types are petroleum-based (which includes microcrystalline waxes as well as the more common form of paraffin that we see in candles and sealing wax), beeswax, and carnauba. At times, woodturners use waxes from one source, but most commercial waxes are blends of several waxes formulated to achieve certain qualities.

Unfortunately, manufacturers like to keep a mystique about their “secret blends,” so we seldom know what waxes or solvents are in the containers.

well as some of the most expensive.

Turners use almost every variety of wax, including automotive and shoe waxes. The best advice is to try several brands of sticks, pastes, and liquids. Narrow your selection based on waxes that give you the properties you prefer (color, sheen, less likely to smudge from handling, more water or stain resistance).

Whether you concoct your own blend or discover one of the many commercial options, you will find a wax that fits your taste. However, put considerable emphasis on how it applies and how it comes off. Does it go on easily (with whatever method you have chosen), and does it come off nicely without streaking or unevenness?

To understand the limitations, test wax over bare wood. This is easily done on plywood or wood samples: Apply two coats of your wax sample, then let it cure for a day or so just to be fair about solvent evaporation.

Next, put droplets of water, ink, and mustard on the samples. Do these different materials dull the surface, pass through the wax, and raise or stain the grain? How much contact can the wax take before



The Japanese toy, top, and kokeshi turners use wax almost exclusively. Their traditional wax, Japan wax, is not technically a wax but a vegetable tallow. However, it is applied and performs like anything we label as wax.



Do you need some color in your wax?

You can add tinting colors or dyes to darken a wax (black, brown, and reds are the most common for this effect). Or, create your own liming wax by adding white color to the mixture to serve as a general tint or to fill the pores. For a stunning effect, add a patina wax of almost any color. There are also a variety of commercial color waxes available.

there are problems?

And one more test of your favorite wax: When waxing darker woods with large pores (such as walnut or cocobolo), does your wood sample stay white in the pores? If so, look for a darker wax.

Conclusions

There are plenty of reasons to use wax in certain situations: for a particular look and feel (especially as regards sheen), for woods that

are hard to finish with traditional approaches, for decorative pieces that will not be handled a great deal, to preserve the color, to add color to a piece, and to add a thin barrier between the wood or finish and the outside world.

Yes, wax does help reduce scratching and offers a bit more water and stain resistance than the finish alone—just not to the extent that some of the manufacturers would lead us to believe.

Play to its strengths and be aware of its limitations. In so doing, you will have another powerful option in your arsenal of finishing tools.

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