WORKSHOP COMPANION

Know-How

Comparing Hardwax Finishes

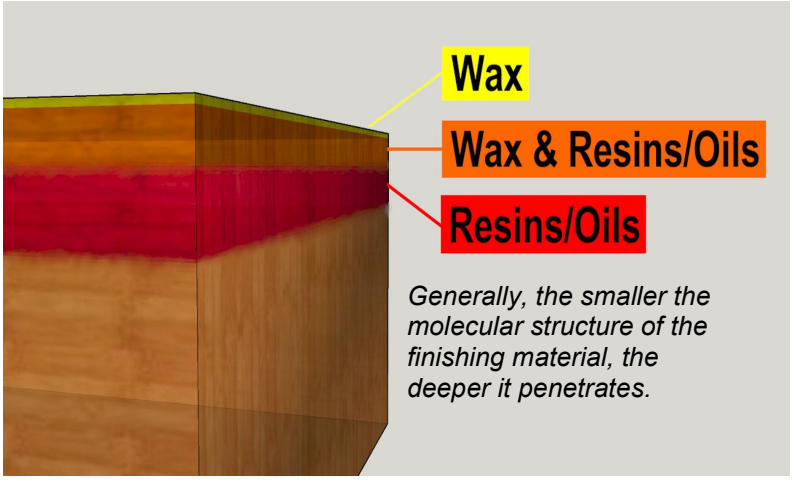
By Nick Engler

Hardwax finishes occupy a unique niche among wood finishes. Most wood finishes cure when you apply them; that is, there is a chemical process that transforms the liquid finish to a hard, protective coating. The initial coats penetrate and bond with the wood; successive coats bond with each other to create a translucent film that covers the wood. Hardwax finishes blend wax, which doesn't cure, with resins and oils that do. These penetrate the wood to protect and beautify from the inside out. They don't build up coats or form a film because you wipe away whatever stays on the surface before it cures.

As it penetrates the wood, the wax, which consists of larger molecules than the resins and oils, stays on or near the surface. The resins, oils, and solvents penetrate more deeply. The solvents evaporate and the resins and oils begin to cure – they combine with the oxygen in the air to form a solid chemical matrix. But because they are mostly cut off from the air by a layer of wax, this curing process is very slow.

And yet you can handle a hardwax-finished piece very soon after application, long before the resins and oils cure. The surface doesn't feel tacky because the wax insulates you from the uncured materials. For that same reason, any dust the falls on the surface won't get stuck in the finish. You can continue to work in your shop, sawing and sanding up a dust cloud without having to worry that it will ruin your good work. This makes a hardwax finish extremely easy to apply and almost impossible to screw up.

It also makes this finish lacking in "sheen." Because there is no lens-like film, there is no depth and little reflectivity. You can rub out other finishes to look glossy, semi-gloss, or satin. But a hardwax finish will always be matte. It is not the finish that I would choose to show off wood with a spectacular grain pattern, such as curly maple or a walnut burl. Because of this, your first step in choosing a hardwax finish is to compare it to other types of finishes to make sure this is the look you want.

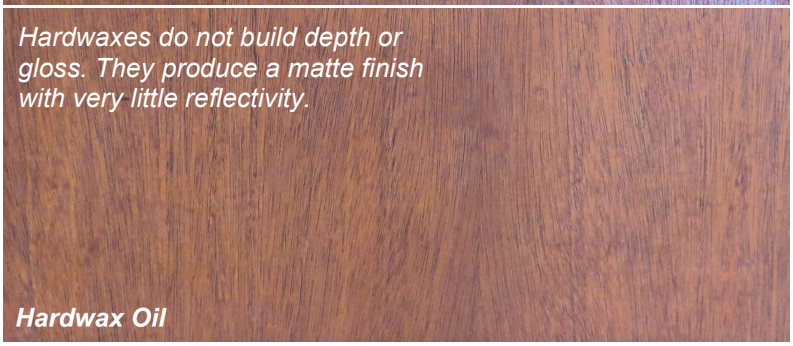


Generally, the smaller the molecular structure of the finishing material, the deeper it penetrates.


I finished this mahogany with General Finishes Hardwax Oil, and then immediately set it beside my band saw and made a cut. The sawdust just blew off – it didn't stick to or otherwise affect the finish at all.


You can build up most traditional finishes and rub them out to create depth and gloss .

Wipe-On Polyurethane (Oil-Based)


Hardwaxes do not build depth or gloss. They produce a matte finish with very little reflectivity.

Hardwax Oil

Hardwax Compared to Other Finishes

Here are several 12-inch-square boards, all cut from mahogany plywood, a reddish open-grained wood. I applied several common wood finishes to seven boards and hardwax finishes to the eighth and ninth to show how each type of finish affects the same wood. The boards are lit with a single LED 4000K lamp, directed from in front, slightly above and to the right of the board so you can gauge the reflectivity. The photos were batch-processed in exactly the same way.

To the right is a raw *unfinished* board so you can see what I started with.


Raw Mahogany

Acrylic

Minwax Polycrylic (water-based)


Acrylic (Water-Based)

Note! The following high-definition photos of finished woods are best viewed on a backlit computer or video screen that allows you to enlarge the images. If you print these out on paper, you will loose the detail and definition these pictures are meant to show.

Lacquer
Watco Lacquer

…

Shellac
Zinsser Shellac
(alcohol based)

Polyurethane
Minwax Wipe-On Polyurethane
(oil-based, wipe on)


Wipe-On Polyurethane (Oil-Based)

Polyurethane
Minwax Wipe-On Poly
(water based, wipe-on.)


Wipe-On Polyurethane (Water-Based)

Tung Oil Finish

Minwax Tung Oil Finish
(oil-based, wipe-on)

Varnish

General Finishes Arm-R-Seal
(oil based)

Hardwax

General Finishes Hardwax Oil

Hardwax (Shopmade)

Our first “NixWax” blend -- beeswax, carnauba, linseed oil, and mineral spirits. The recipes and directions for making these finishes are divulged on page 16.

Increasing the Sheen

While a hardwax finish produces a much less reflective surface than other options, you can increase the sheen somewhat by sanding to a much higher grit than what most hardwax finish manufacturers recommend. The manufacturers' instructions for most of the commercial finishes we tested direct you to sand to 220#, but we found sanding to 600# increased the sheen quite a bit. Upwards of 600# there was little perceptible change.

Hardwax Oil (220#)

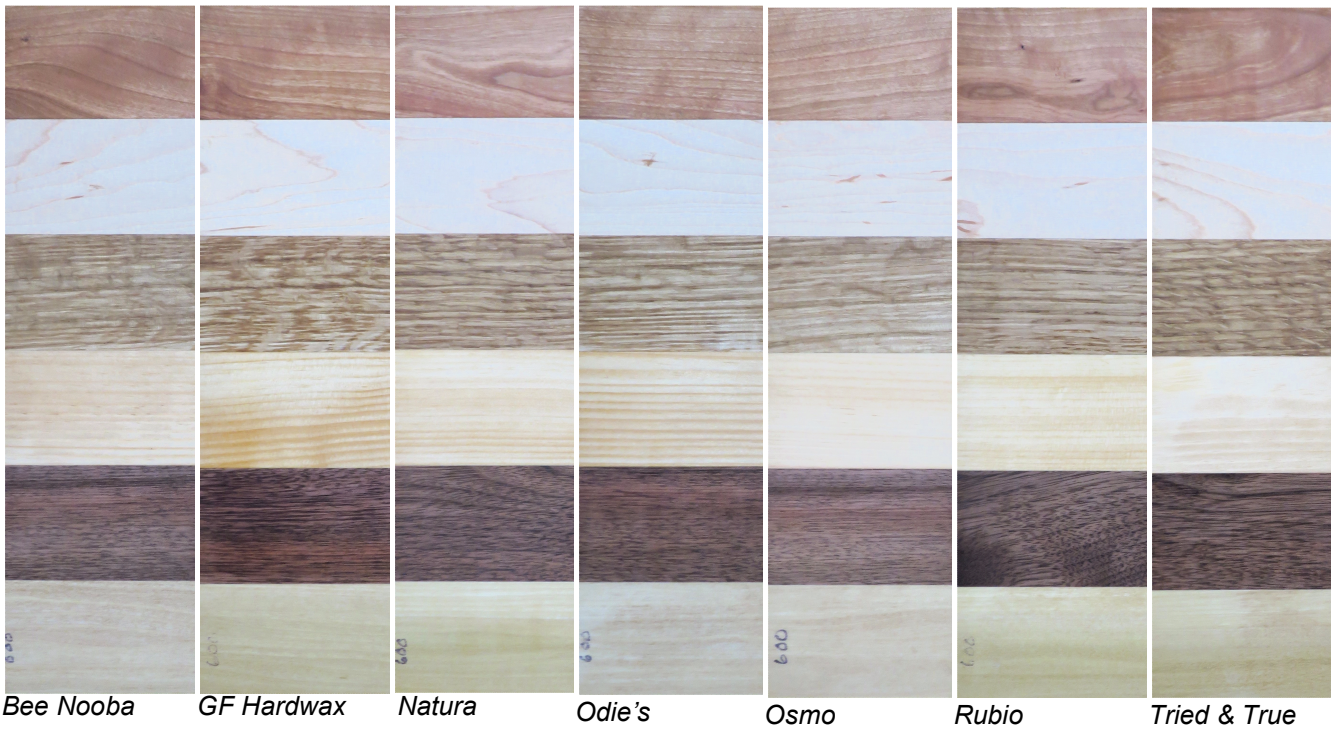
Hardwax Oil (600#)

Hardwax Finishes Compared

We tested seven commercial hardwax finishes. To make our test boards, we glued up 2-inch (51 mm) wide strips of six wood species – poplar, walnut, spruce, white oak, hard maple, and cherry. To the right is one of the raw test boards with no finish applied.

We divided each of the test boards into four areas and sanded them to 220#, 400#, 600#, and 1000# respectively. This helped determine how much the reflectivity (sheen) increased as the sanding grit decreased. In all cases, we found the sheen got sheenier up to 600#, but did not increase much at 1000#.

The photos show the 600#/1000# side of the test boards only.



Bee Nooba *GF Hardwax* *Natura* *Odie's* *Osmo* *Rubio* *Tried & True*

Bumberchutes BeeNooba Wax
www.bumblechutes.com

Bumberchutes Bee Nooba Wax

General Finishes Hardwax Oil
www.generalfinishes.com

General Finishes Hardwax Oil

Note! The following high-definition photos of finished woods are best viewed on a backlit computer or video screen that allows you to enlarge the images. If you print these out on paper, you will loose the detail and definition these pictures are meant to show.

Natura OneCoat Wood Oil
(This is a two-part finish.)
www.naturaonecoat.com

Odie's Oil
www.odiesoil.com

Osmo Poly-X Oil
www.osmocolorusa.com

Rubio Monocoat Oil Plus 2C
(The is a two-part finish)
www.rubiomonocoatusa.com

Tried & True Original Wood Finish
www.triedandtruewoodfinish.com


Tried & True Original Wood Finish

Nixwax Hardwax Oil
The photo shows one of the recipes we developed and applied to a test board (the food-contact-safe mix) so you can see how a shopmade hardwax finish compares to the commercial brands. The recipes and directions for making these finishes are on page 16.


NixWax Hardwax Oil (Shopmade)

As you can see, there isn't a great deal of difference in appearance between these hardwax finishes. I'm of the opinion that the differences you see have more to do with the variation in wood grain in the strips that I glued up than they do the finishes themselves. Consequently, there's no objective way we could rank these finishes for appearance. We did, however, rate them for ease of application, reflectivity, feel, and how much the finish warmed the wood. But even these were very close.

Unfortunately, I could find no reliable tests or ratings for strength and durability, other than the claims of the manufacturers. These finishes evolved from wood floor coatings, and if they are durable enough for floors, they should hold up well elsewhere. But many manufacturers recommend recoating the wood surface every few years – I have objects I use every day that I finished with wipe-one varnishes that are still serviceable after thirty years.

Strangely, many of the craftsmen who have reviewed these finishes seem to focus on their ability to repel water as if that were a substitute for durability. Anything with a wax coating will shed water, and no one seems to mention how well a hardwax-finished cutting board still sheds water after it's been wiped with a detergent-soaked rag every day for a year. I either need more information or more experience before I can talk confidently about hardwax durability.

The only aspect that I could find that really sets these finishes apart from one another – and from the rest of the finishing world – was their cost. Which leads us to an eye-popping price comparison…

Ease of Application

1. Tried and True Original Finish
2. General Finishes Hardwax Oil
3. Osmo Poly-X Plus 2C
4. Odie's Oil
5. Bumberchute's Bee Nooba Wax
6. Rubio Monocoat
7. Natura Onecoat Wood Oil

Reflectivity (Sheen)

1. Rubio Monocoat
2. Bumberchute's Bee Nooba Wax
3. Tried and True Original Finish
4. Natura Onecoat Wood Oil
5. General Finishes Hardwax Oil
6. Odie's Oil
7. Osmo Poly-X Plus 2C

Feel (Pleasant to the Touch)

1. Rubio Monocoat
2. Bumberchute's Bee Nooba Wax
3. Tried and True Original Finish
4. Natura Onecoat Wood Oil
5. General Finishes Hardwax Oil
6. Odie's Oil
7. Osmo Poly-X Plus 2C

Warming the Wood Color

1. General Finishes Hardwax Oil
2. Tried and True Original Finish
3. Natura Onecoat Wood Oil
4. Bumberchute's Bee Nooba Wax
5. Odie's Oil
6. Rubio Monocoat
7. Osmo Poly-X Plus 2C

The Cost of Hardwax Finishes

Hardwax finishes are very expensive, by and large. Manufacturers justify this by pointing that these finishes cover more surface area than other types of finishes, and that may be so. But it's hard to imagine that they cover enough to warrant their advertised prices. Here is the cost per ounce (30 ml) for the finishes we tested, as of this writing in March 2025:

General Finishes Hardwax Oil
$49.95/Pint…$3.12 per ounce
Hardener $18.95/4 oz…$4.75 per ounce;
The combined cost with hardener is $3.60 per ounce

Osmo Poly-X Oil
$59.99/25.3 oz.…$2.37 per ounce

Odie's Oil
$55.91/9 oz…$6.21 per ounce

Rubio Monocoat Oil Plus 2C
$77.99/?...$6.59 per ounce

Natura Onecoat Wood Oil
$39.99/?...$3.29 per ounce

Bumberchutes Bee Nooba Wax
$37.49/8 oz…$4.68 per ounce

Tried and True Original Wood Finish
$34.99/32 oz…$2.20 per ounce

The average is $4.01 per ounce!

How does this compare with the non-hardwax stuff? Here are the current costs of some of the finishes I use regularly:

Minwax Oil-Based Polyurethane
$14.97/32 oz…$0.47 per ounce

Varathane Water-Based Polyurethane
$22.98/32 oz…$0.72 per ounce

Minwax Tung Oil Finish
$25.52/32 oz…$0.80 per ounce

General Finishes Arm-R-Seal (Urethane)
$48.95/32 oz…$1.53 per ounce.

Watco Danish Oil
$24.99/32 oz…$0.78 per ounce

Deft Lacquer
$21.99/32 oz…$0.69 per ounce

Zinsser Shellac
$21.98/32 oz…$0.67 per ounce

The average is $0.81 per ounce.

By that measure, the commercial hardwax finishes that we tested are almost **5 times** more expensive! (And they don't seem to cover 5 times the surface area.)

This is what convinced us to develop our own hardwax finishes. The cost of the waxes, oils, solvents, and other ingredients put these shopmade finishes at $0.51 to $0.60 per ounce. You'll find the recipes on the one-pint can labels that I made up just for a lark. They're on the next page; and they will print out full-size on ordinary letter-size paper. If you would like more information on how to make these finishes or on hardwax finishes in general, check out the Hardwax Finish page on our web site. Furthermore, most of the finish brands shown here, plus all of the ingredients to make our hardwax recipes are sold through our Affiliate Store.

2.0 oz / 57 g Beeswax
0.5 oz / 14 g Carnauba
2.5 oz / 71 g Mineral Spirits
2.5 oz / 71 g Spar Urethane
7.5 oz / 213 g Boiled Linseed Oil

Melt together in double boiler. Apply to wood, warm with heat gun, let cool, wipe off excess and buff, repeat.

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NixWax HARDWAX Oil Finish

You make it yourself!

1.0 oz / 28 g Beeswax
0.5 oz / 14 g Carnauba
2.5 oz / 71 g d-Limonene
1.0 oz / 28 g Raw Linseed Oil
8.0 oz / 227 g Tung Oil
0.06 oz / 2 g Vitamin E Oil

Melt first 5 ingredients together in double boiler; add Vitamin E as mixture is cooling. Apply to wood, warm with heat gun, let cool, wipe off excess and buff, repeat.

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FOOD SAFE-ISH!

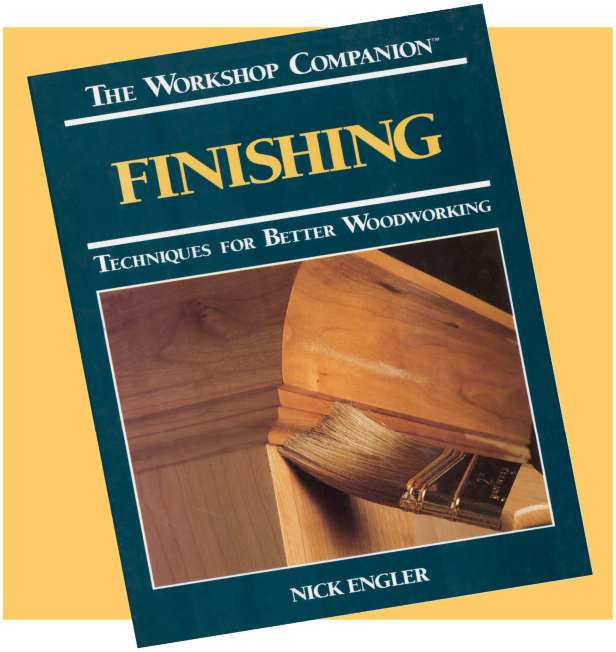
Not yet
FDA Approved!

NixWax HARDWAX Oil Finish

You make it yourself!

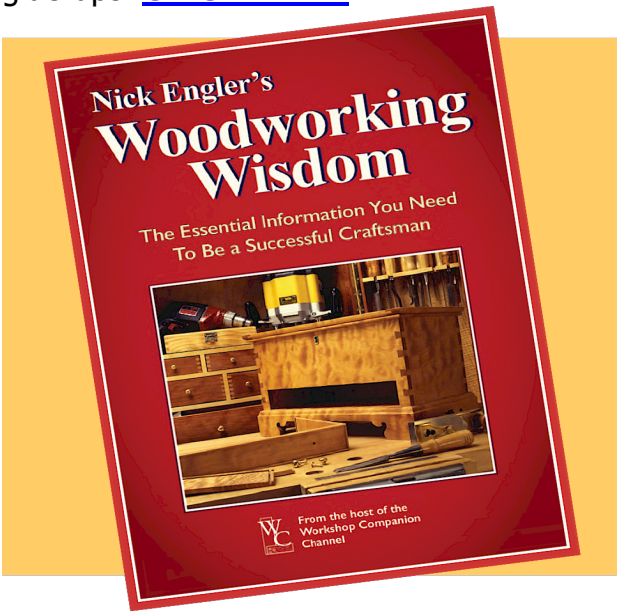
If you found this Know-How article on hardwax worthwhile, here are several more publications you might enjoy:

Bowls from Boards, made by cutting precision rings on a band saw, gluing them up, and turning them. ***CLICK HERE!***



Professional secrets for **Finishing** choosing and applying all types of wood finishes effectively. ***CLICK HERE!***

One of the most useful jigs I've ever designed – an **Assembly Table** to simplify glue-ups. ***CLICK HERE!***



Woodworking Wisdom is a collection of the core knowledge you need to be a competent craftsman – woodworking design, power tool and hand tool know-how, techniques and methods, wood and woodworking materials. ***CLICK HERE!***