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Oil Finishes: Their History and Use

By: Bob Flexner | March 14, 2011



Here's how to cut through all the confusion about oil, tung oil and wiping varnish.

By Bob Flexner

Finishing is a mystery to most woodworkers, but it's not because finishes are difficult to apply. All that's involved in applying a finish is transferring a liquid to wood using one of three really easy-to-use tools: a rag, a brush or a spray gun.

Finishing is a mystery largely because of the confusion created by manufacturers in their labeling, and there's no better example of this than the mislabeling of various "oil" finishes.

The Background

Before the growth of the consumer market in the 1960s and 1970s there was little confusion about finishes. There were fewer products available and most were bought and used by professionals who were fairly knowledgeable about them. Manufacturers helped by listing ingredients, something few do today. Boiled linseed oil was available, of course, and was used by many amateurs who sometimes added varnish to it to make the oil a little more durable. To make the mixture easier to apply, they thinned it with turpentine or mineral spirits so the proportions were about one-third linseed oil, one-third varnish and one-third thinner.

Linseed oil (which is from the seeds of flax plants) and blends of linseed oil and varnish are both easy to apply. Wipe, brush or spray the finish onto the wood; keep the wood wet with the finish for 5 to 10 minutes, or until it stops soaking in; then wipe off the excess and allow the finish to cure overnight at room temperature.

Next day, sand lightly to smooth the raised grain. Then apply one or two more coats, allowing overnight for each coat to cure. Be sure to wipe off the excess after each coat, and leave your rags spread out to dry so they don't heat up and spontaneously combust.

Although boiled linseed oil and oil/varnish blends are easy to apply, they cure soft, so they have to be left too thin on the wood to be protective or durable. The growing consumer market created a need for something better. Shellac, varnish and lacquer were, of course, available at every paint store, but these finishes don't have the mystique of oil, and they require brushing or spraying, which makes them more difficult to apply than oil.

Oil-Varnish Blend

One replacement was prepackaged oil/varnish blend. This didn't add anything to what was already being used, but manufacturers made consumers think it did by labeling their products with enigmatic names like Danish oil (made by squeezing Danes?), antique oil (just for antiques?), Velvit oil and Salad Bowl Finish.

Then they attached misleading marketing phrases to the product such as "contains resin," "protects the wood

from the inside" or "makes the wood 25 percent harder" to make consumers think they were buying something more than simply a repackaged oil/varnish blend.

Tung oil

A second replacement was a product labeled "tung oil." This oil, which is pressed from the nuts of a tung tree, was introduced to the West from China about 1900. It was useful for making superior, water-resistant varnishes, especially for outdoor use.

But tung oil is too difficult for most people to use by itself as a finish. You apply tung oil just like linseed oil or oil/varnish blend, but you have to sand tung oil after every coat, not just after the first, and it takes five to seven coats, allowing two to three days drying time between each, to achieve a smooth, attractive sheen.

Tung oil comes from China, however, so it has a certain mystique. Because few people really knew what tung oil was anyway, many manufacturers began packaging varnish thinned about half with paint thinner and labeling it "tung oil," "tung oil finish," or "tung oil varnish." Others further muddied the waters by calling their thinned varnish Val-Oil, Watertox, Seal-a-Cell or ProFin.

Thinned varnish (more properly called "wiping varnish") can be applied like boiled linseed oil or oil/varnish blend, or it can be applied with a brush like regular varnish. It makes an excellent finish because it looks good after only two or three coats, cures rapidly, and can be built up to a thicker, more protective film because it cures hard.

Wiping varnish is an improvement in protection and durability over boiled linseed oil and oil/varnish blend, but the only thing new about it is the misleading name on the can. Anyone can make their own wiping varnish by thinning any oil-base varnish or polyurethane enough so it is easy to wipe on the wood.

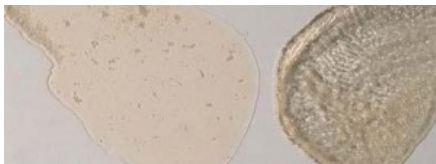
The Difference Between Oil and Varnish

To help understand the differences in these products, you need to know the difference between oil and varnish.

Oil is a natural product. Some oils, such as linseed oil and tung oil, turn from a liquid to a solid when exposed to oxygen, so they make effective finishes. But these oils cure slowly to a soft, wrinkled film if applied thick, and this makes it necessary for you to remove all the excess after each coat. You can't build oil finishes to a thicker, more protective coating.

Varnish is a synthetic product made by cooking a drying oil, such as linseed oil, tung oil, or modified soybean (soya) oil, with a resin, such as polyurethane, alkyd or phenolic. Varnish cures relatively rapidly to a hard, smooth film if it is applied thick, so you can leave the excess if you want to achieve a more protective coating.

Varnish is as different from oil as bread is from yeast (an ingredient in bread). It makes no more sense to call a varnish "oil" than it would to call bread "yeast," and manufacturers do everyone a great disservice by doing so.



When wiping varnishes dry on a non-porous substance, such as this piece of glass, they are smooth and hard (left). Oil and varnish blends, on the other hand, will cure soft and wrinkly on a non-porous surface, as shown at right.

How to Tell Which You Have

Because you can't trust the labeling, you have to know how to determine the difference between these products yourself.

Linseed oil is always labeled linseed oil, so far as I know. There are two types: raw and boiled. Raw linseed oil takes weeks to cure. Boiled linseed oil has driers added to make it cure in about a day with the excess removed. I know of no interior use for raw linseed oil.

Real tung oil has a distinct smell that clearly separates it from wiping varnish and oil/varnish blends, both of which have a varnish-like smell. Only if you are willing to go through the extra work for the increased water resistance you get in a non-building finish should you use real tung oil.

Linseed oil and tung oil are always sold full strength, so if "petroleum distillate" or "mineral spirits" is listed as an ingredient, this is a clue that the finish is either wiping varnish or oil/varnish blend. To tell the difference between these two you'll have to pour some of the finish onto a non-porous surface, such as glass or Formica, and let the finish cure for a couple of days at room temperature. If it cures fairly hard and smooth, it is wiping varnish. If it wrinkles badly and is soft, it is a blend of oil and varnish. **PW**

What the Finishing Manufacturers Don't Tell You

Common brands of finish that are wiping varnish:

- Formby's Tung Oil Finish
- Zar Wipe-on Tung Oil
- Val-Oil

- Hope's Tung Oil Varnish
- Gillespie Tung Oil
- Waterlox
- General Finishes' Sealacell
- General Finishes' Arm R Seal
- Daly's ProFin
- Jasco Tung Oil
- Common brands of finish that are oil/varnish blends:
- Watco Danish Oil
- Deft Danish Oil
- Behlen Danish Oil
- Maloof Finish
- Behr Scandinavian Tung Oil Finish
- Minwax Tung Oil Finish
- Minwax Antique Oil Finish
- Velvit Oil
- Behlen Salad Bowl Finish
- Behlen Teak Oil
- Watco Teak Oil

Want to learn even more? Bob's book, "Flexner on Finishing" is a steal in our store. Buy it today!



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About Bob Flexner

Bob Flexner is a contributing editor to Popular Woodworking and the author of woodworking finishing books including "Flexner on Finishing," available in the ShopWoodworking.com store at this link.

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