

Cooking up the right finish is paramount

As every throwback woodworker knows, using natural oil-resin varnishes yields a fine surface

Many times when furniture makers are seeking to replicate "the old ways" of working, we overlook the finish. All too often I have seen wonderfully made period furniture, crafted in both the style and technique of an earlier age, yet inaccurately finished, appearing too dry or wrapped in plastic. It seems so much easier and simpler to slather on something we can pick off the shelf of the hardware store than to carry through to the end our desire to reflect and honor earlier technologies and arts. It doesn't have to be so.

Although contemporary opinion favors shellac as the primary historic furniture coating, from the late 17th century through the end of the 19th century, natural oil-resin varnishes were an important part of practically every woodworking shop's inventory. Here is a brief introduction to making and using coatings that have been used in decorative and protective applications for at least a thousand years:

Pros and cons

Oil-resin varnishes dry essentially through a chemical reaction with the atmosphere rather than evaporation of a "spirit," which means it can take quite a while for them to harden. The result is a varnish generally tougher than shellac, but that also makes it more difficult to repair later. And oil-resin varnishes need to be formulated, not simply mixed. Often,

FINISHING

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the process of making them entails high-temperature concoctions prepared under a watchful eye and with great attention to safety.

On the other hand, vegetable-based oil-resin varnishes are not only "natural," but they can render rich, saturated surfaces that have a certain "glow" we generally find attractive. Applying an oil-resin varnish actually requires very little expertise; if you can recognize the business end of a good brush and avoid drips and runs, you've pretty much conquered the craft aspect of the technology.

Ingredients

Making your own historically accurate oil-resin coating requires that you know what ingredients were used and how they were mixed. In short, there are five parts to a successful oil-resin varnish:

Oil: Linseed oil is often where varnish formulation begins. But there are many other options among nut and seed oils, which each bring their own special qualities such as clarity, low color, ease of use, or ultimate performance once fully cured. By almost any measure, true tung oil (china nut oil) is a superior product to linseed oil, but is no longer widely used. Walnut oil and sunflower seed oil can be used for varnishes where

extreme clarity and minimal yellowing is utmost, but both dry more slowly than linseed or tung oils.

Resin: All of the resins employed for oil-resin varnishes before 1900 were vegetable-based, mostly refined tree saps of one kind or another. Important historical varnish resins included the copals, mastic, sandarac, damar and amber. Colophony was widely available since it is the solid fraction of pine sap, but performs poorly, darkens rapidly, and is not a good choice unless the piece demands it.

odorless mineral spirits.

Drier: Since oil-resin varnishes cure through a slow chemical reaction with oxygen, a catalyst or "drier" is often added (called a siccativ in the literature). Most driers are metallic compounds, historically ground-up leaded glass, but modern driers are often manganese or cobalt. Sometimes simply cooking the oil and blowing air through it jump-starts the polymerization reactions necessary for drying.

Plasticizer: The resins used for oil varnishes tend to be hard and brittle, so a plasticizer may be necessary. Fortu-

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nately, the oil component serves as a plasticizer to some degree, but including some of the softer resins like elemi, benzoin, or balsam-like Venice turpentine serve the purpose well.

Making your own

Unlike shellac, which when mixed with alcohol will dissolve, most varnish resins must be "run" or melted, sometimes at temperatures approaching 600 degrees Fahrenheit, and then mixed with hot oil to form the varnish. This means the safety of you and your space are a top priority. This really is more dangerous than cooking French fries. For higher temperature varnish-making, I move my work station outdoors.

Some oil-resin recipes call for only modest heat, while others require extreme heat and the utmost care in handling the materials. A portable hot plate (not an open flame) works fine. I use a sand bath setup, using a cast-iron cooking pot filled with enough play sand to push in my Pyrex mixing beakers to heat my ingredients. Putting a cold jar into hot sand will probably shatter the jar, so heat everything together from cold. Make sure to use heat protective clothing, eye protection and gloves that can withstand spills of scorching hot oil. If possible, handle the hot jars with beaker tongs or something similar.

Here are some of my favorite varnish recipes. All temperatures are in Fahrenheit, and, yes, you can use a meat thermometer, although I use a digital kiln thermometer myself. Other tools you will need include a thrift-store coffee grinder for pulverizing resins and a metal stirring rod.

One of the simplest old varnishes is

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