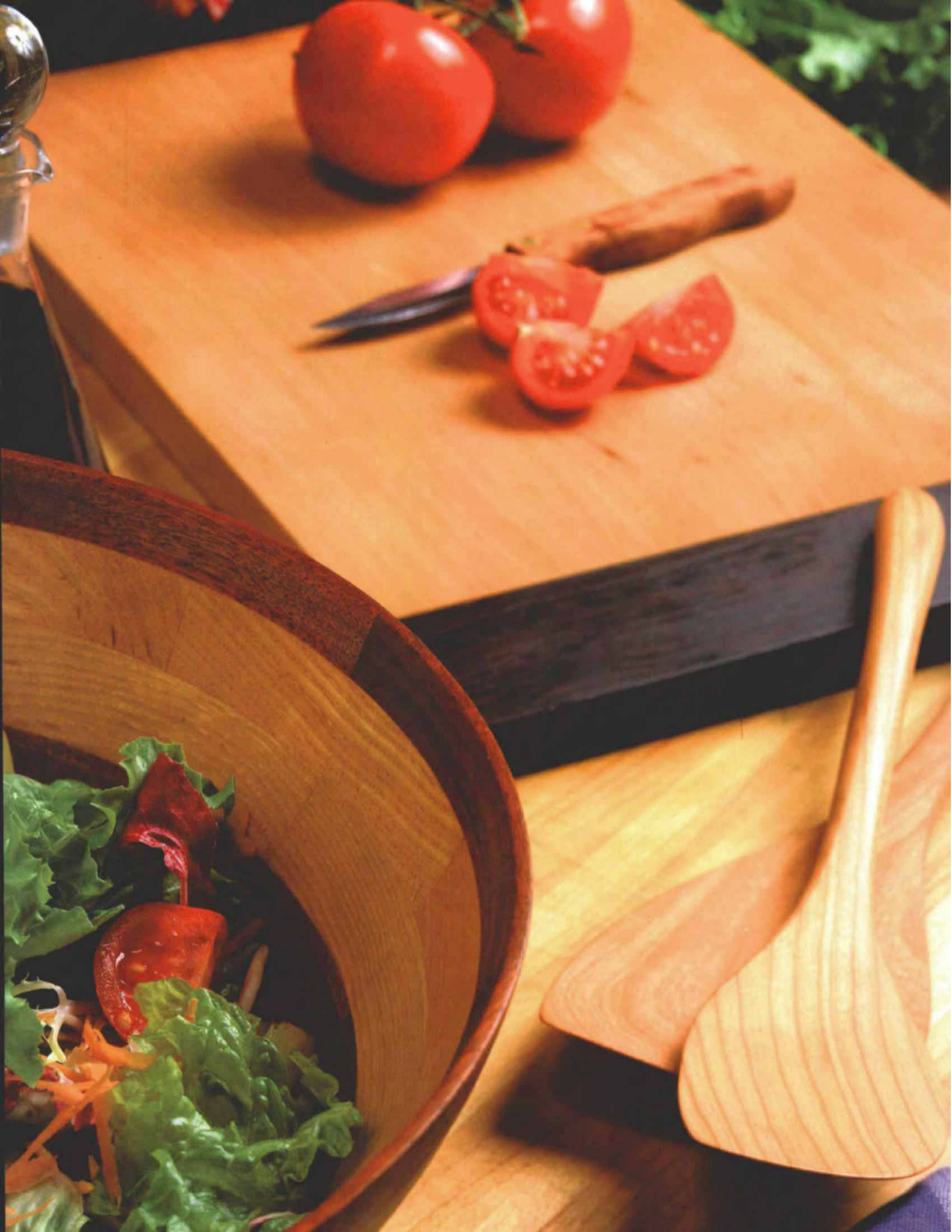


Which Finishes Are Food Safe?

Exploring the menu of finishes for woodwork in the kitchen

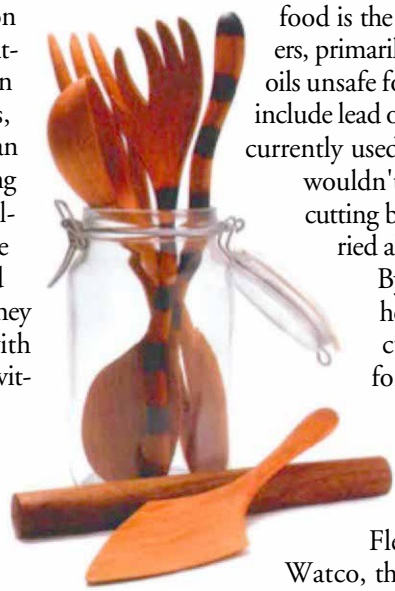
BY JONATHAN BINZEN

I was hoping to compile a list of foolproof products and strategies for food-safe finishing. But I soon discovered that it wasn't going to be that easy. What I found, after scores of conversations with chemists and regulatory agencies, finish manufacturers, finishing experts and woodworkers, is that although there are a few finishes that everyone agrees are food safe (see the box on p. 69), those finishes tend to be the least protective. I also found that the great majority of finishes are in a kind of limbo, with many experts saying most are fine for use with food but with others saying they should be avoided because there are some lingering questions about their safety.

Coatings you can cut on

For cutting boards and the like, you can cut the confusion in half. Wood finishes can be divided into two broad categories: film-forming finishes, which harden in a thin layer on top of the wood, and penetrating finishes, which harden (if they do harden) in the wood rather than on it. When choosing a finish for a cutting or chopping surface, you can start by ruling out the film finishes. Although film finishes like polyurethane, nitrocellulose lacquer, varnishes and epoxy form a hard surface and are considered by many to be nontoxic when cured, they aren't impervious to knives. By cutting on boards with these finishes, you'll eventually slice through the film, inviting water underneath and compromising the finish.

That leaves you with the penetrating finishes to choose from. From the standpoint of food safety, this group can be chopped in two as well. On one side are what I'll call unmixed oils—pure tung oil, raw linseed oil, mineral oil and cooking oils such as walnut oil. These unmixed oils are all naturally occurring substances, are all sold in their pure form and are all perfectly edible (although not all delectable). On the other side are what I'll call mixed oils—boiled linseed oil and the range of oil-and-varnish mixtures often sold as teak oil, tung oil finish and Danish oil. The mixed oils are synthesized blends of oil, resins, driers and other ingredients whose identity often won't be revealed on the can.



Finishes you invite to dinner. *For protecting cutting boards and other abused and oft-washed items, penetrating oils are best.*

Mixed oils—As a class, the mixed oils offer considerably more protection from moisture and staining than the unmixed oils because of the resins and other additives most mixed oils contain. (Boiled linseed oil is an exception. It does not contain resins and is not as water-resistant as the other mixed oils.) Mixed oils are made easier to use by the addition of driers. The metallic driers in a tung-oil based varnish, for example, make it easier to work and quicker to cure than pure tung oil. But the safety of mixed oils as a finish for cutting boards and other items in contact with food is the subject of debate. It is the heavy-metal driers, primarily, that cause some people to consider mixed oils unsafe for food surfaces. The metals used no longer include lead or mercury, but one chemist told me that the currently used driers aren't above suspicion and that he wouldn't use a finish with heavy-metal driers on a cutting board. "Twenty years ago, nobody was worried about lead. Look what happened," he said.

By far the majority of people I spoke with, however, consider that mixed oils, once fully cured (a process that can take up to a month for some finishes), are probably fine for contact with food. Watco Danish oil, for example, has been used for years as a finish for cutting boards and bowls. According to one chemist I spoke with at Flecto Coatings, which now manufactures Watco, the company has never had any complaints. He said he thinks the question of food safety is "substantially a nonissue." But Watco isn't pitched as a food-safe finish, and the company won't recommend it for such use because, as I was told, "We haven't done the testing." The testing he was referring to is a lengthy and expensive process of assessment conducted by the Food and Drug Administration (FDA). Watco oil hasn't been found unsafe, of course, but unless it is tested and found to comply with

FDA regulations, the company won't accept the legal liability of proclaiming it a food-safe finish.

One company that has done the testing is Behlen's, makers of Salad Bowl Finish. They have been touting this mixed oil (probably tung-oil based, but they won't tell) for years as food safe, but only recently had it tested by the FDA (it passed). The process was costly as well as protracted, and Behlen's had to pull the finish from distribution during the testing. According to several finishing experts, passing the FDA tests doesn't necessarily make a particular finish different from others in its class; it has been tested, and the others haven't. All of which means that the consumer is left without a definitive answer on whether most mixed oils are food safe.

Unmixed oils—With unmixed oils, there is no such dilemma. We know that pure tung oil and raw linseed oil are edible. And you can lean back and drink walnut oil or mineral oil right out of the bottle, if you want to.

Pure tung oil will provide a much better moisture barrier than any of the other unmixed oils (and some of the mixed oils), but it does present difficulties in application, requiring multiple coats with a day or so to dry between coats and at least a week of final curing time. Pure tung oil is an ingredient in a slew of other finishes, many of which use rung oil in their name. If you want the unmixed version, look for "pure tung oil" or "100% tung oil" on the label.

Applying raw linseed oil is also a long-term project. Without the driers that are added to make it boiled linseed oil, raw linseed oil can take several weeks to cure. Even then, it doesn't provide good water-resistance and will have to be reapplied fairly often.

Walnut oil is probably the best of the cooking oils for use as a finish, because, unlike olive or peanut oil, walnut is a drying oil—it polymerizes within a few days of application, its molecules linking together so it becomes inert and cannot go rancid. There's no trick to applying walnut oil—just soak the surface, triple-soak the end grain, let it sink in and wipe off the excess. It won't provide much water-resistance and will need to be reapplied frequently.

If you ask professional makers of cutting boards what finish they use, whether in one-man shops or at major manufacturers, it's almost certain you'll find they use old-fashioned mineral oil. Although it's a derivative of petroleum, mineral oil is odorless, tasteless and colorless, completely inert and approved as a food additive by the FDA. It is the same stuff you see in the drug store sold as a laxative. Some makers I spoke with use it straight, others blend it with beeswax or paraffin, and everyone had a twist on how it ought to be applied. (For information on making and applying a mineral oil and beeswax finish, see the box on the facing page.)

Many makers use mineral oil because of the convenience and low cost. It certainly isn't a miracle finish. It never dries, and to maintain even a modest amount of protection for the wood, you need to reapply it often. But it is extremely inexpensive, and because the stuff is completely inert, it will last indefinitely in the bottle. And it ranks with the least fussy of all finishes. As with walnut oil, you simply drench the cutting board, let it soak and wipe it dry. Various companies sell mineral oil explicitly as a wood finish, but such products are typically twice the price of mineral oil sold as a laxative in the drug store. The drug store variety may be slightly more viscous, but it is the same substance, If you want it a little runnier to make it penetrate the wood more deeply, you can heat it gently on the stove.

Which finish for woodenware?

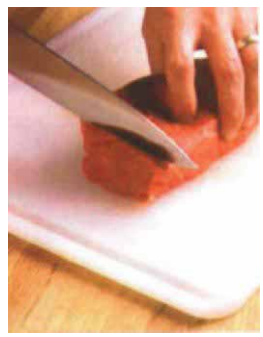
The considerations for finishing wooden bowls, serving and cooking implements, plates and trays are the same as those for finishing cutting surfaces, with a few exceptions. For stirring spoons, pasta forks, spatulas and other implements that will see duty in bubbling liquids or sizzling solids, some kind of penetrating finish would be preferable to a film finish. Although you won't be cutting on these finishes, the combination of heat and water will eventually undermine even a rock-hard finish like epoxy. And cer-

Food fight: wood vs. plastic cutting boards

Cutting controversy. Among researchers, plastic cutting boards were once clearly favored as more sanitary, but wooden boards are gaining proponents.

The debate over whether plastic or wood is the better material for cutting boards rages on. There is research on both sides of the issue. One prominent study shows that wooden cutting boards are less likely than plastic ones to harbor bacteria after being used to cut raw meat. Other studies show just the opposite. The Food and Drug Administration (FDA) and other agencies that oversee the food-service industry have backed off their previous stand that only plastic should be used. The FDA now recommends that boards be made of plastic or of "hard maple or equivalently hard, close-grained wood." The FDA stresses that to make cutting boards easy to clean, it is important to use materials "free of cracks and crevices," and to "avoid cutting boards made of soft, porous materials."

With any cutting board, the primary danger (assuming you wield your knives carefully) is from food poisoning. This can occur when a food that will be eaten uncooked is chopped on a board that has previously been used to cut raw meat or raw fish. To prevent such cross-contamination, the FDA recommends that after cutting raw meat or fish, you should wash the cutting board with hot water, soap and a scrub brush. Periodically, sanitize the board with a solution of chlorine bleach (1 tsp. bleach to 1 qt. water). Flood the surface with bleach, let it sit a minute, then rinse it off. You can protect yourself further by using one cutting board exclusively for foods that will be cooked and another one for foods that are ready to eat. —*J.B.*



Slicing to the heart of the matter. *With either wood or plastic cutting boards, segregating raw meats from ready-to-eat foods is the way to avoid contamination.*

Photos except where noted: Scott Phillips

EDIBLE FINISHES

In the welter of contrary opinions about which finishes are food safe and which are not, a few naturally derived, unblended, no-hidden-ingredients, certainly nontoxic finishes stand out.

Pure tung oil. Extracted from the nut of the china wood tree. Used as a base in many blended finishes. Available from catalogs and hardware stores. Difficult to apply, requires many coats, good water-resistance.

Raw linseed oil. Pressed from flax seeds. Not to be confused with boiled linseed, which contains metallic driers. Listed as a food additive by the Food and Drug Administration (FDA). Very long curing time, good looks, low water-resistance, frequent reapplication.

Mineral oil. Although derived from petroleum, it is colorless, odorless, tasteless and entirely inert. Sold as a laxative in drug stores and as a wood finish in hardware and kitchen-supply stores. Simple to apply, low water-resistance, frequent reapplication.

Walnut oil. Pressed from the nuts of the walnut tree. Sold as a salad oil in health food stores and in large grocery stores. Walnut oil dries and won't go rancid. Easy to apply, frequent reapplication.

Beeswax. The work of the honey bee. Can be mixed with an oil to create a better-smelling, slightly more water-repellent finish. Sold in woodworking and turning catalogs.

Carnauba wax. Derived from the Brazilian palm tree. Harder than beeswax and more water-resistant. Can be used straight on woodenware as a light protective coating or a topcoat polish. Sold in woodworking and turning catalogs.

Shellac. A secretion from the lac bug. Harvested in India. Super blond shellac in flake form is the most water-resistant variety. A film-forming finish. Sold in woodworking catalogs and hardware and art supply stores.

Nothing. Available everywhere. Makes a reasonable finish for woodenware. No application time. Free.

tainly any duty in the dishwasher (not a great idea for wood with any finish) will eventually whiten and crack a film finish.

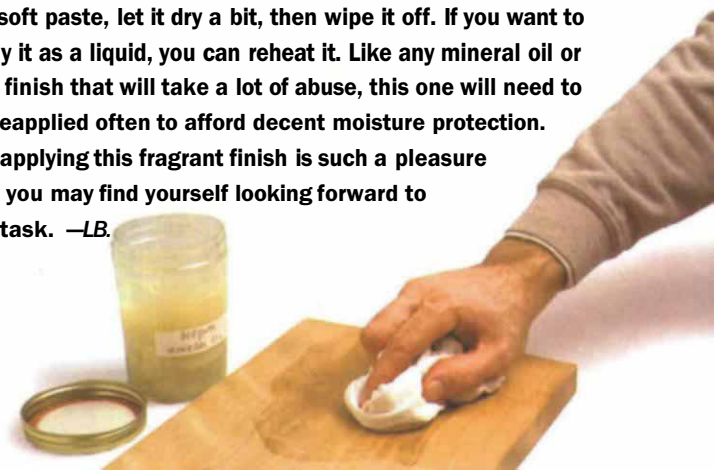
One place where a film-forming finish would be appropriate is on items like trays that won't be subjected to high heat or constant washing but would benefit from a water-repellent finish. Chris Minick, a chemist and contributing editor to *Fine Woodworking,* suggests that if you are uncomfortable using a synthetic film-former, you might try shellac. If the shellac is selected and applied with care, it will provide a hard finish that can be sponged off and ingested with impunity. Minick recommends using only super blond shellac and buying it in dry flake form. Super blond, also known as dewaxed shellac, is ordinary shellac that has been refined to remove the wax that makes other grades of shellac less water-resistant. Buy it in flakes rather than premixed, and use it immediately, because once it is in liquid form, shellac gradually begins to lose its water-repellent properties. But remember, even a drop of vodka from a martini or a dribble of wine will dissolve shellac and mar the finish.

A final option for finishing woodenware—an option that neatly skirts all these difficult issues—is to use no finish at all. If you don't mind chancing some stains and are willing to forego the luster an oil finish can add, it is a viable solution. With the right wood, something hard and tight-grained and ring-diffuse like maple, beech or cherry, there shouldn't be any major problems with going buck naked. □

Jonathan Binzen is an associate editor of Fine Woodworking *magazine.*

A recipe for one sweet finish

The food-safe finish that appeals most to me is one recommended by Jim and Jean Lakiotes, West Virginia makers of spoons and other kitchen items, as well as furniture. Their finish is a mixture of mineral oil and beeswax. To make it, warm the mineral oil in a saucepan over low heat, and melt a chunk of beeswax in it equal to about one-fifth or one-sixth the volume of the oil. (At high heat, there's a potential for fire. Be sure to keep the heat low, and consider using a double boiler.) As the wax begins to flake apart and dissolve, stir frequently. When the mixture is blended, pour it into a jar to cool and solidify. To apply, wipe on an excess of the soft paste, let it dry a bit, then wipe it off. If you want to apply it as a liquid, you can reheat it. Like any mineral oil or wax finish that will take a lot of abuse, this one will need to be reapplied often to afford decent moisture protection. But applying this fragrant finish is such a pleasure that you may find yourself looking forward to the task. —*LB.*



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