



Shellac's Amazing Journey

Follow this finish from the tree to your shop,
and learn why it is still unmatched

BY VIJAY VELJI

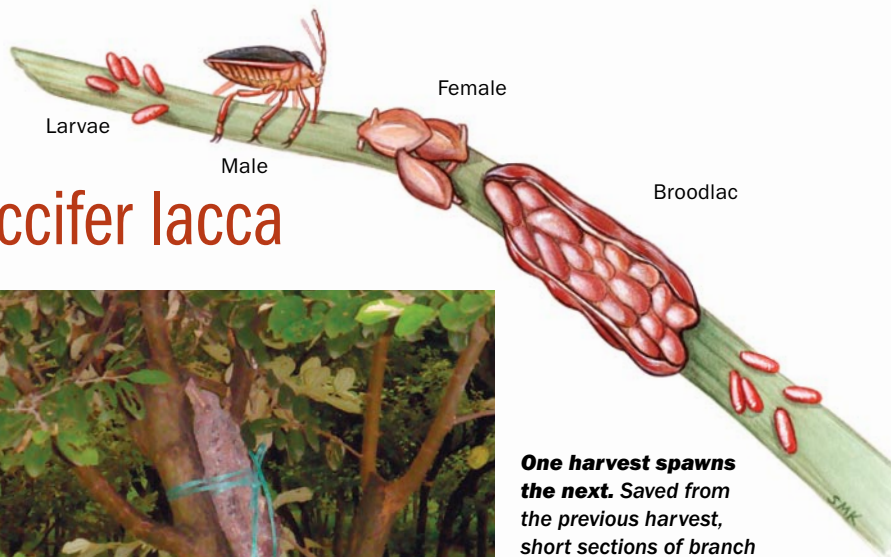


Making flakes. Two workers pull a cooling film of shellac across the floor while a third hits it with a stick to begin the process of turning it into shellac flakes.

For over two centuries, Western woodworkers have appreciated shellac's unique qualities. It can be used as a sealer on bare wood, as a tinted finish to warm up or age wood's appearance, or as a topcoat—including the incomparable French polish.

However, shellac's story goes back much further than 200 years and is not confined to wood: In its native India, medicinal uses for shellac were described several thousand years ago, while a book published there in 1590 mentions polishing with shellac. Since then, it has also been used for everything from phonograph records to the coating for time-release pills. Having recently returned from India, I'll show you the

Laccifer lacca



One harvest spawns the next. Saved from the previous harvest, short sections of branch encrusted with shellac-producing insects and their eggs, known as broodlac, are tied to suitable host trees showing new growth.



Shellac on a stick. The larvae emerge from the broodlac and settle on the new growth. They form a hard, protective shell around the twigs. This is known as sticklac, which is the basis of shellac. The fuzzy white substance on the outside is wax.



The people and the process

BUTTONLAC

Raw material needs refining



Crushed and sieved. After the sticklac is harvested and crushed, it is sieved to remove pieces of the host tree.



Seedlac is the result. Sticklac is placed in a container with water and trodden on to break open the insect bodies and remove the red dye. The result is called seedlac.



One at a time. Workers pass a canvas tube filled with dry seedlac in front of an oven. As the seedlac melts, they twist the tube, forcing molten shellac through the canvas, where it is scraped off and deposited onto a galvanized sheet of metal to form buttonlac. While the buttons are still soft, they are stamped with the manufacturer's seal (left).



fascinating way shellac is grown, harvested, and refined. Then I'll describe the grades of shellac and how to get the most from each one. The best part of the story is that despite man's efforts, no other finish can match shellac's versatility, beauty, or environmental friendliness.

Shellac really does grow on trees

Shellac is derived from the resinous secretion of a tiny insect—tinier than the period at the end of this sentence—known as *Laccifer lacca*. Twice a year, in India and Thailand, millions of red larvae about 1/64 in. long hatch and settle on the tender, fresh twigs of certain trees. Each larva inserts its proboscis into the tree and then secretes a protective coating consisting of a dark red scale and a yellow-to-reddish substance called lac resin. The larvae mature inside their protective shells and become sexually

mature insects in about eight weeks. The males crawl out of their shells to fertilize several females and then die. Their direct contribution to shellac is insignificant.

However, the females, growing in size to accommodate their many eggs, increase production of lac resin and wax. In 14 weeks, the new larvae hatch and emerge to begin a new life cycle. Thus the insect completes two life cycles in a year, yielding two lac crops; the primary one in April-June and the secondary one in October-November, which generally has lower quality. It takes about 300,000 insects to produce 1 kilogram or 2.2 lb. of shellac.

How it is harvested—Shellac is often described with the terms baisacky, kusumi, or rangini. Baisacky is the spring harvest season. Kusumi is the lac obtained from the Kusum tree. It is the most expensive since it contains very little red dye, giving it a golden yellow color. The rangini ("colorful") strain comes from the two other

FLAKES BY HAND



Spread and stretched. Instead of creating individual buttons, a worker places the molten shellac on the outside of a ceramic cylinder filled with hot water (above). The worker then spreads it into a thin layer using the stem of a palm frond. The worker removes the shellac from the cylinder, then uses his hands, feet, and mouth to stretch the shellac into a thin sheet (right). Once it has cooled, he lays it down on the ground to be broken into shellac flakes.



FLAKES BY MACHINE



Still labor-intensive. To make shellac flakes by machine, molten seedlac is poured across a steel drum heated by steam. A weighted bar spreads the shellac into a thin sheet and two workers further stretch the material after it comes out of the machine.



More handwork follows. After the film of shellac has cooled, it is beaten with a stick to form the flakes familiar to woodworkers.

The finished products, and how to use them

Shellac is available in cans, where it is already dissolved in alcohol (see opposite page), or in dry forms that you dissolve yourself when needed. Shellac in dry form must generally be mail-ordered but comes in a much wider variety of types. The main grades are seedlac, buttonlac, handmade waxy flakes, and machine-made dewaxed flakes, which are the most useful by far. When dry, all shellac is non-toxic, so it's safe for children's toys and also is widely used in the food and drug industries as a coating.

SEEDLAC: A UNIQUE COLOR

Despite the large amount of wax and residue that have to be removed by filtering or decanting after seedlac has been dissolved in alcohol, many makers and restorers of period furniture swear by the color seedlac gives to cherry and mahogany in particular. As with all waxy shellacs, seedlac can't be applied directly before or after another type of finish because of adhesion problems.

BUTTONLAC: GOOD FOR ANTIQUES

Although the manufacturing process removes most impurities, restorers value the color and cloudy appearance of buttonlac (caused by wax) when matching the color and finish on an antique piece. Don't use buttonlac if you are in a hurry, as it takes longer to dissolve than flakes.

DEWAXED FLAKES: FOR ALL FINE FINISHES

Dewaxed shellac is by far the best for finishing. It contains no impurities and has negligible amounts of residual wax. While French polishing can be done with any shellac, dewaxed varieties give the best results. It makes an excellent sealer on bare wood (controlling blotches and preventing sap bleed-through) as well as a barrier coat between finishes that are either incompatible (waterborne finish over oil) or have a common solvent and might blotch (waterborne clear finish over a waterborne dye). It is also less susceptible to water damage than waxy shellac. The colors include garnet, orange, beige, and super blonde. These can be used to add color to the wood, or super blonde shellac can be tinted with concentrated dyes or alcohol-soluble dye powders already dissolved in alcohol.

popular host trees, the palas and the plum. It contains more red dye, and also more wax, making it cheaper than kusumi.

The cultivation of lac is fairly simple: The host trees are pruned and when the new shoots emerge, two or three branches containing female insects and their eggs, known as broodlac, are tied near the new shoots. The larvae emerge, settle on the shoots, and start producing lac. At harvest time the twigs are cut, and after a portion is set aside to serve as broodlac, the rest is scraped off and sold as sticklac. This consists of chunks of lac, often with a hole through the middle where the twig was.

The color of this raw material varies from year to year as climate variations alter the tree's sap, on which the insects feed.

Turning raw sticklac into seedlac—In a mainly cottage industry carried out by hand, sticklac is crushed and then sieved to remove tree debris and other contaminants. It is then washed several times in large vats and at the same time rubbed against the sides of the vat to break open the insect bodies. This dissolves a red dye that can be used as a substitute for cochineal.

After repeated cleaning, the lac is left to dry and then sieved once more to produce seedlac. Apart from lac resin, sticklac contains wax, lac dye, and other impurities.

Shellac is made by hand or machine

The rest of the process also was once done entirely by hand. These days, machine production predominates, but a niche market in handmade shellac survives.

To make solid shellac by hand, a worker fills a long, narrow canvas bag with seedlac. One end is held in front of an oven and the other is attached to a crank. Heat from the oven melts the seedlac and the crank forces the molten shellac through the bag while the impurities remain inside. The molten shellac is scraped off and dollops placed onto a galvanized iron sheet, forming small disks called buttonlac.

To make shellac flakes, the worker uses a palm frond to spread the molten shellac over a porcelain cylinder filled with hot water. Using considerable skill, he pulls the hot, pliable shellac off the cylinder and stretches it into a very thin sheet using his hands, feet, and even teeth. Once this translucent sheet is cool, it is broken into flakes.

CANS ARE CONVENIENT

If you want the benefits of shellac without the bother of flakes, premixed shellac, made by Zinsser, is available in hardware stores and home centers. The company sells dewaxed SealCoat and waxy Bulls Eye. The latter come in “amber” and “clear” but they have the same drawbacks that waxy flakes have, such as a cloudy appearance and incompatibility with some other finishes. A better all-round choice is SealCoat, which has the advantages of dewaxed flakes plus a longer shelf life than dissolved flakes. However, the preservatives make it less suitable than flakes for French polishing.



WAXED

DEWAXED

Machine-made shellac is produced in two different ways. One uses the same principle as in handmade shellac: Seedlac is melted, poured across a steam-heated metal drum, and then forced into a thin sheet using a weighted bar pressing against the drum. The thin, rapidly cooling sheet is further stretched by hand as workers pull it across the floor. Once it has stretched about 25 ft. from the machine, it is cool enough to be broken up with sticks into shellac flakes.

The second machine method uses solvent to extract pure shellac from seedlac. All dewaxed shellac, whether canned or flakes, is made using the solvent method.

What is the shelf life of shellac?

Shellac flakes have a shelf life. After about two years, dewaxed shellac that has been stored in a cool, dark, dry place will dissolve in alcohol more slowly, and some of it will not dissolve completely, forming a gelatinous mass at the bottom of the bottle. If this shellac is used for French polishing, it will require more than the usual amount of oil for lubrication and will take longer to dry. Because they are less processed, waxy grades last about three years.

Once dissolved in alcohol, shellac does not last more than about six months. Store the mixture in a dark, dry area, ideally between 65° and 70°F. However, canned shellac has a shelf life of three years from the date stamped on the can. □

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WHAT IS A SHELLAC CUT?

The cut is the ratio of dry shellac dissolved in 1 gal. of denatured alcohol. A 1-lb. cut means 1 lb. of shellac dissolved in 1 gallon of alcohol. A 2-lb. cut is used for most applications whether brushing, spraying, or padding, but for a final coat with no brush marks, a 1-lb. cut is better. For canned shellac, Zinsser's waxy grades come as a 3-lb. cut; SealCoat is a 2-lb. cut. To turn a 2-lb. cut into a 1-lb. cut, combine 3 parts shellac with 2 parts alcohol.



1 lb. dry shellac



+ 1 gallon of alcohol



= A 1-lb. cut



Just mix and wait. Place the shellac flakes and alcohol in a clean glass jar with a tight-fitting lid. Give it an occasional shake and it should dissolve in a few hours.

HOW TO MAKE SHELLAC FROM FLAKES

You probably won't need a gallon of shellac, so a useful ratio is as follows: 1 oz. of shellac by volume in a cup of alcohol yields a 1-lb. cut. If you need a 2-lb. cut, simply increase the shellac flakes to 2 oz.

