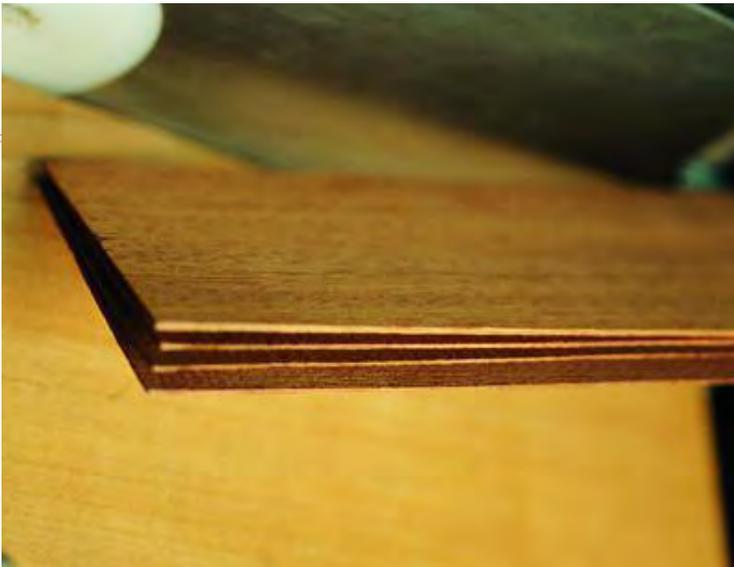
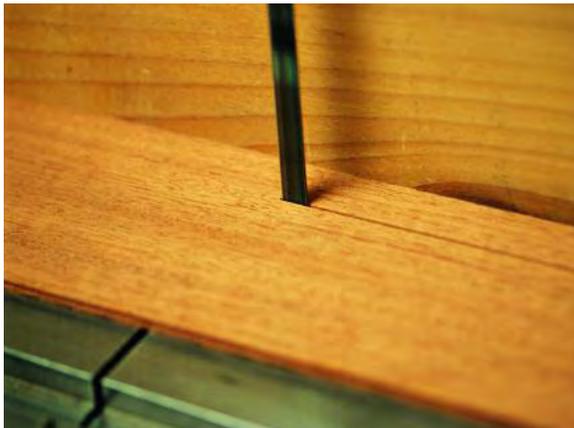


## LININGS



**7-20** Four pieces resawn for linings

The linings are made from four thin pieces of mahogany 32 inches long,  $\frac{3}{8}$  inches wide, and 0.045 inches thick. These strips can be made from rough stock by cutting a piece 3 inches wide and 32 inches long. This wood does not have to be quartersawn, although quartersawn mahogany has a look that is hard to resist. Resaw four pieces approximately 0.060 inches thick, and mill to 0.045 inches (**7-20**). Again, the mahogany may be difficult to thickness by hand. Using a drum sander may be best.



**7-21** Cutting laminates as sawn off the plank

Once the wood is milled, put the stack of laminates back together the way they were sawn off the plank and cut them all together on the band saw to a width of  $\frac{3}{8}$  inches (**7-21** and **7-22**). Prepare the lining molds made in Chapter 4 along with the eight clamps necessary for each one and a few pieces of masking tape to hold the laminates while you apply the clamps. Place the outer portion of the mold in the bench vise. Sand each surface prior to gluing with 180-grit sandpaper, and apply the glue with a roller.



**7-22** Linings cut on the band saw

## Placing the Linings in the Mold

Take the stack of laminates and tape them to the lower bout portion of the mold, making sure just a little hangs over the end at the lower bout. Remove this from the vise, and put the inner portion of the mold in place. The first clamp should be the one at the waist. The mold should be the same thickness as the width of the laminates. This will make it easier to get all the laminates to line up on edge. Apply all the clamps, wipe off any excess glue, and set aside (7-23 through 7-26). The linings should remain in the mold for at least four hours.

Once you have all four linings out of the molds, lay them out as they will be on the guitar and mark the edge that will be rounded over. There should be two sets of two linings oriented



7-23 Lining laminations and mold



7-24 Applying glue

## Linings Affect the Sound

The purpose of the linings is to provide a glue surface along the perimeter for gluing the top and the back. Do the linings affect the sound? You bet. In the beginning, I used tantalones, which are individual blocks spaced approximately  $\frac{1}{16}$  inches apart, and glued them on with hide glue. Torres' guitars were built this way. The guitars had a big yet unfocused sound. In trying to find a method I was more comfortable with, I laminated some thin strips on a form to make linings. The difference in sound was noticeable. The sound was more focused and sharper. I have been using this method ever since.



7-25 Clamping



**7-26** Leave clamped for at least four hours



**7-27** Shaping the inner edge



**7-28** Lining

opposite to each other. Chisel the excess dried glue off this edge, and plane flat with a small hand plane. In the shaper or router table, insert a ¼-inch round-over bit with a bearing. Raise the bit until the lower edge is just below the surface of the table, so as not to put a bead on the linings. Using push blocks to feed the work to the blade while holding it down on the table, round over the edges on the machine (**7-27** and **7-28**).

## Gluing the Linings to the Sides

The linings are now ready to be glued onto the sides. To facilitate the gluing process, I have made a laminated caul to prevent the linings from being dented by the clamps (**7-29**). It is not necessary to have one as fancy as this—an extra laminate will do.

When working alone, holding more than one thing in place while trying to apply clamps can be quite challenging. One way to simplify things is to use double-stick tape to hold the caul to the linings while you are getting the clamps in place. The sides are placed in the side lamination mold when gluing on the linings to facilitate clamping. Apply the glue with a roller and clamp in place. The linings should be slightly proud of the edges of the sides all the way around by approximately ⅛ inches. Once the clamps are on, set the timer to eight minutes (**7-30** through **7-35**). If the correct amount of glue has been applied, eight minutes is enough time for the squeeze-out to have dried to the point where it will be easy to remove without making a mess. When the time is up, take a chisel and scrape away the excess (**7-36**). The linings should remain in the mold for at least four hours.