

HEIRLOOM TOOL CHEST



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Striking veneer is combined with simple plywood construction to create the perfect home for your fine tools.





Easy-to-Build Case

The veneer on the tool chest gives it a great look. But it starts with an easy-to-build case with a lot of storage inside. (You'll add the veneer later.) The case holds six drawers. Flipping up the lid reveals a handy tool rack and small shelf for keeping frequently used tools close at hand but off your workbench.

MATERIALS & JOINERY. To minimize the weight and maximize space inside, the case of the tool chest is made from $\frac{1}{2}$ " plywood. And it's assembled with straightforward joinery.

Creating the case begins with cutting the sides and back of the case to the sizes shown in Figure 1. Along with the shelves, they create openings for the drawers and the upper shelf. To do this, you need to cut a series of dadoes across the sides and back. The dadoes can be cut at the table saw with a dado blade. Figure 1 shows the locations for each of the five dadoes. You can find the size of the dadoes in Figure 1b.

While I was at the table saw, I cut the joinery that connects the sides and back. I cut a rabbet along the back edge of each side. Then, I cut a mating rabbet on each end of the back panel. You can see how this works in Figure 1c. This joint adds a lot of glue surface and helps register the parts during assembly.

SHELVES. You'll want to hold off on assembly for now. That's because you need to make the shelves, first. These panels are all the same size, but some have a few added details I'll mention in a bit.

After cutting the panels to size, I cut a rabbet on each end and the back edge to fit the dadoes in the sides and back pieces, as you can see in Figure 1b. That's all the joinery you need to cut on the lower three panels. The upper two shelves have additional dadoes cut from front to back to accommodate short, vertical dividers. These create smaller openings for the upper three drawers of the tool chest. The dimensions for the dadoes are in Figures 1a and 1b.

SHORT DIVIDERS. Before assembling the case, I cut the dividers to size and cut a tongue on the upper and lower edges to fit the dadoes in the upper shelves.

The final detail to complete is to drill holes for stem bumper glides that center and support the drawers, as shown in Figures 1, 1a, and 1b. There's one thing I want to mention about installing the bumpers. I trimmed the bumpers in the vertical dividers so they wouldn't interfere with each other, as in Figure 1b.



CASE ASSEMBLY. The case can be assembled at this point. There are a lot of parts that have to go together at once, so it's a good idea to use slow-setting glue and do a dry run to get your clamps ready.

When you're ready, set the back of the case on the workbench and set one of the sides in place. Then, sandwich the dividers between the upper shelves and fit them into the case side and back. After adding the remaining shelves, glue and clamp the other side in place.

HARDWOOD EDGING. That completes the main part of the case. The next steps get the case ready for the veneer. I started by adding some hardwood strips to the exposed edges of the case. (Note: The edging is applied to the front and top edges only.)

For the most part, applying edging to the case is simply a matter of cutting thin strips to size and gluing them in place, as shown in Figure 2. But there are a couple of areas I'd like to highlight.

The edging that wraps around the top edge of the case is mitered at the back corners for a seamless look,



as you can see in Figure 2a. Then, at the front of the case, the edging is mitered across the width to meet the edging on the front of the case, as shown in Figure 2a. I like to cut



the edging strips just barely wider than the thickness of the plywood. The strips are cut to length and can be held in place with masking tape while the glue dries. Once the glue dries, a few swipes with a sanding block are all it takes to bring the edging perfectly flush with the case.

I glue on corresponding strips of edging in stages. For example, the two long vertical strips go on and are sanded flush before adding the horizontal pieces.

EASY-TO-APPLY VENEER. At this point, you can apply the veneer, as shown in Figure 3. I used engineered veneer that looks like zebrawood. It's sold through *Certainly Wood* and *Oakwood Veneer Company*.

I cut oversized pieces of veneer and attached them with spray contact adhesive. Apply the back piece of veneer first and trim it flush. Then add the sides. This way, the side pieces extend completely from front to back. You can learn more about this process on page 12.

Once the veneer is trimmed flush, I softened the sharp edges with some sandpaper. This prevents the veneer from chipping.



completing the case lets you turn your focus to adding the storage inside it. This consists of building the drawers and adding the flip-up lid. I built the drawers first.

SIMPLE DRAWERS. The tool chest holds six drawers. However, as you can see in Figure 4, there are only four sizes. Better yet, the joinery on each drawer is identical.

SIDE

BOTTOM

VIEW

So to save some time and extra setups, it's a good idea to cut all the drawer parts to size, first. (Be sure to allow for a $\frac{1}{16}$ " gap on all sides.) Then, you can cut the joinery for all the drawers at once.

LOCKING RABBET JOINERY. A table saw makes quick work of cutting the locking rabbets that connect the front and back to the sides. I'll explain the three-step process I use.



The locking rabbet begins with a groove cut across each end of the front and back pieces, as shown in Figure 4b. The inside tongue is trimmed back slightly to fit a dado cut in the drawer side.

The third step is to cut the dado near each end of the drawer sides. It's sized and located to mate with the groove and short tongue on the front and back pieces.

STOPPED COVE. Before assembling the drawers, I took the sides over to the router table to rout a stopped cove detail along the inside top edge. This detail softens the inside edge of the drawer. You can see how I did this on page 10.

ADD VENEER, TOO. Once the cove is routed, you can cut a groove in each piece to hold the bottom, as in Figure 4c. Just like the case, the drawer fronts have veneer added.

The stem bumpers and knobs are the last things to add to the drawers. A pair of stem bumpers is added to each drawer back to keep the drawer level, as you'll notice if you take a look at Figure 4a. The knobs I used for the drawers are unique. The center of each knob has a recess that holds a wood plug that matches the veneer and hardwood used on the project. I created the plugs at the drill press using a plug cutter. A little epoxy holds the plugs in place. Finally, I chucked the knobs in the drill press and sanded the plugs smooth.

FLIP-UP LID. The lid at the top of the tool chest does more than enclose the case. It's L-shaped to fit between the case sides and flush with the top, as shown in Figure 6a. The lid has veneer applied to the top and front face.

The lid starts with two pieces — a top and a front. There are two things to consider as you size these pieces. First, you need to allow for a gap between the lid and case. And you need to factor in the thickness of the edging that will be applied on each side.

The lid top and front are joined with a tongue and groove. A groove at the front edge of the top accepts a tongue cut in the front (Figure 6a).

COVER THE EDGES. Following the joinery, I applied hardwood edging to the bottom edge of the front and the sides of the lid assembly. For cleaner joint lines, I mitered the edging pieces, as in Figures 7 and 7a.

HARDWOOD BRACES. Before adding the veneer, I made a pair of braces to stiffen the lid and keep it from cupping. The braces are made from the same zebrawood as the edging.



After sawing and smoothing the profile, I routed a cove along the lower edges (Figure 6b).

The braces are secured to the lid with glue and screws. The screws are driven through the lid top and into the cleat. To keep the screw holes from telegraphing through the veneer, I filled the holes and sanded them flush. Now you can apply veneer to the top and front face of the lid pieces.

A pair of hinges and a lid stay allow the lid to open smoothly and keep it in the open position. The hinges rest in mortises cut in the back of the lid (Figures 6 and 6a).

The lid stay needs to be attached in just the right position to allow the lid to open and lock in place. You can see how I did this in Shop Short Cuts on page 11.

Finally, I stained the drawer fronts and lid. I used a custom mixture consisting of equal amounts of *Java* and *Georgian Cherry* gel stains

a.

made by General Finishes.





Custom Tool Racks

With the lid open, the upper part of the tool chest makes a handy shelf for holding tools. This also exposes the underside of the lid, which creates a perfect place for adding a couple of tool racks for storing (and displaying) some of my favorite hand tools.

CHISEL RACK. The chisel rack is made up of two parts. The upper rail is drilled and notched to hold the ferrules of my chisel set. The lower rail is simply notched to accept

the blades. Magnets glued into counterbores in the lower rail keep the chisels firmly in place.

STORAGE PANEL. The other rack features custom pockets to hold other hand tools. It consists of two pieces of ¹%" plywood and a layer of veneer. Depending on the size of the tool, you may need to cut the recess into one or both layers of plywood, as illustrated in Figure 8. The tools are simply held in place with thin, maple turn buttons.



- (4) 74 X 74 RUDDER FEET W/ SCREWS (6) #4 x $\frac{3}{2}$ " Bross Eb W/ Screws
- (6) #4 x ³/₄" Brass Fh Woodscrews
- (8) #6 x ⁵/₈" Brass Fh Woodscrews
- (2) #8 x 2" Fh Woodscrews

3/8"-Dia. - Cut to Fit

⅓ x ⅓ - 1⅛

1³⁄₄ x 3 - 15

11/2 x 21/2 - 36

EE Dowels (6)

GG Rails (4)

HH Legs (4)

FF

Turn Buttons (6)

³/₈ x 2¹/₈ - 13¹/₄

 $\frac{1}{2} \times \frac{27}{8} - \frac{227}{8}$

 $\frac{3}{8} \times \frac{27}{8} - \frac{131}{4}$

N

0

Ρ

Q

Middle Dwr. Sides (2)

Lower Drawer Frt./Bk. (4)

Lower Drawer Sides (4)

Wide Dwr. Bottoms (3) 12⁷/₈ x 22 ¹/₂ - ¹/₈ Ply.

Strong & Sturdy Stand

Once the tool chest is complete, you need a place to put it. Rather than take up valuable bench space, I made a complementary stand. The stand is made from poplar and stained the same color as the drawer fronts and lid.

You can see in Figure 9 that the stand is made up of two identical end assemblies that are joined with a series of stretchers.

END ASSEMBLIES. To build the base, begin by cutting the legs and upper and lower rails to size. Mortises in the rails accept matching tenons in the legs (Figure 9b). I also cut mortises on the inside edges of the legs to accept a middle rail. Finally, there are two mortises cut in the inside faces of the legs to hold the long stretchers.

The next pieces to make are the short middle rails. They have a tenon on each end to fit mortises in the legs. And there's a centered mortise on the inside face of each rail to accept the lower stretcher.

Now, you can do some assembly. Just be sure to install the middle rail before fitting the legs into the upper and lower rails.

CONNECTING STRETCHERS. With the ends assembled, you can use the tool chest to determine the length of the upper stretchers (plus tenons). Allow a little extra space (3/6) so the fit of the chest isn't too snug.

To make the arched stretchers, start with a 4"-wide blank. After cutting a tenon on each end, cut the curved profile on the top and bottom of the rail (Figure 9b). The final piece to make is the lower stretcher. Cut it to size and create the tenons on each end (Figure 9a).

To hold the tool chest in place, I added rubber feet to the bottom of the chest and drilled matching shallow holes in the upper rails of the stand. Now you have a handy place to store your tools without taking up space on your workbench.



CUTTING DIAGRAM







⁸/₄" x 9" - 84" POPLAR (10.5 Bd. Ft.)

НН		НН					$\overline{//}$	$\overline{/}$	$\overline{//}$]]	
НН			нн		V		\square				
GG	GG		GG	GG							
V/////////////////////////////////////			///////////////////////////////////////		T/////////////////////////////////////	//.	//.	///	//	///	11

5/4" x 71/2" - 84" POPLAR (5.5 Bd. Ft.)

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½" x 3" - 72" MAPLE (1.5 Sq. Ft.)



1/2" x 61/2" - 96" MAPLE (4.3 Sq. Ft.)

Р	Q	Q	М	N	 //	$\overline{/}$	7	$\overline{/}$	/
Р	Q	Q	М	N				[]	



NOTE: MIDDLE DRAWER SIDES (N) AND LOWER DRAWER SIDES (Q) ARE PLANED TO 3/6" THICK





SHOP SHORT CUTS

Stopped Cove

The drawers in the heirloom tool chest have a stopped cove routed on the inside edge, as shown in the photo at left. To speed up the process of cutting this profile in all 12 drawer sides, I turned to the router table and a set of stop blocks.

I marked the end points of the cove on one drawer side. Then, I used that piece as a

gauge to set the position of the stop blocks. Simply align the bit with each layout mark on the workpiece and clamp a stop block to the fence at the opposite end. To rout the profile, brace the drawer side against the right stop block (drawing below). Then, pivot the piece into the bit and slide it along the fence until it contacts the other block.





Installing a Lid Stay

I used a lid stay on the tool chest to hold the lid in the open position. There's just one trick: You need to install the stay in the correct position to keep the lid open, but the stay must fold so the lid can close completely. To avoid peppering the tool chest with holes in a trial-and-error process, I used double-sided tape to fine-tune the position. You can start by attaching the lower end of the stay using the dimensions shown in detail 'a' below. With the lid open, extend the stay arm and lock it. Then, secure the upper bracket to the lid with double-sided tape, as shown in the drawing at left. Try closing the lid. If it doesn't close tightly, reposition the bracket and try the lid again before fastening the stay with screws.



EASY VENEERED PANELS

You can create custom plywood panels to dress up a project in a short time with this simple technique.



Exotic veneer is a sure-fire way to take the look of a project up a notch. It can be used as an accent or for creating the entire piece — something that would be difficult or too expensive to do with solid wood. However, the traditional process of veneering can be intimidating for many woodworkers.

To minimize the hassle, I use a simple, modern technique that's quick and easy to master. There are three keys to this technique: The first is selecting the right type of veneer, the second is choosing a good substrate, and the third is using the correct adhesive.

EASY VENEER. "Veneer" used to imply raw wood veneer, which comes in

narrow pieces and is often wavy and brittle. But you won't have to worry about those problems. Today's paper-backed veneer and engineered veneer are easy to work with and have several advantages



 Utility Knife. For straight and smooth edges, cut the veneer with several light strokes.

over raw wood veneer. Both are flatter, come in larger sheets, and are often less expensive.

NO CLAMPS NEEDED. However, the main reason I like using "modern" veneer is that I can apply it with



Veneer Saw. The teeth on a veneer saw are designed to cut cleanly and prevent tearing.





Trim it Flush. At the router table, use a flush-trimming spiral bit to cut away the waste.

spray contact adhesive. This fastdrying glue really speeds up the process and eliminates the need for clamps. And since there's no moisture in the glue, warping in the finished panel isn't a problem.

SMOOTH SUBSTRATES. It's important to consider the material the veneer is applied to — the substrate. The main goal in applying veneer is to end up with a flat panel. So you want to select a substrate that's as flat as possible (margin photo). For case panels, I like to use Baltic birch plywood or MDF. And when making thin door panels, 1%" (or 1/4") hardboard is a good choice.

WHEN TO APPLY. Before you can use the materials to make panels, you have to decide when to apply the veneer — before or after assembly.

I applied veneer to the tool chest after assembly for a few reasons. Applied after assembly, the veneer covers the case joinery. And the tool chest is small enough that I wasn't wrestling with large veneer pieces. Finally, adding veneer towards the end of the construction process means I didn't have to worry as much about damaging it.

However, if your project uses larger panels or the veneer will be visible on the inside as well, it's best to apply the veneer before assembly. Either way, the process is pretty much the same.

You should also consider how and when to cover the exposed edges of the substrate. The photos at right show three good options.

FLAT VENEER. The veneer I used came in a large roll. So before cutting and

applying the veneer, I laid it out and let it "relax" overnight. Some slight curling is okay because the glue will keep it tight to the substrate.

While the veneer is resting, cut the substrate panels to their finished size. The panels can then serve as a guide to size the veneer.

SIZING VENEER. When cutting the veneer, I initially make it slightly oversized (1" wider and longer). This makes it easier to align on the substrate. You can trim the veneer flush to the substrate later.

To cut the veneer, you can use either a veneer saw or a utility knife (lower photos on the previous page). Use a straightedge to guide the tool and a light touch to get it started. Paper-backed veneer is pretty forgiving to cut. But unbacked, engineered veneer can splinter easily, especially on cross-grain cuts.

APPLYING THE VENEER. The task at this point is to bring the veneer and substrate together. As I mentioned, I use spray contact adhesive for this.

Spray an even coat on both pieces, making sure to cover the edges well,



Edging First. Hardwood edging is applied before the veneer for a seamless panel.



TRIM IT FLUSH. Now, you need to trim the veneer flush. Here again, you have some options. For thick panels, a good method is to use a router and a flush-trim bit. If you're doing this after the project is assembled, a hand-held trim router is the best tool for the job. Otherwise, I prefer to do the job at the router table with a spiral bit (right photo above).

On thin door panels, the bearing won't make contact on the substrate. So instead, carefully trim the veneer flush with the veneer saw or utility knife.

Once the door panels are complete, you can continue on with your project. All in all, this veneer technique adds a great look without adding many steps or much time to your project.



Veneer First. Apply edging after the veneer so the veneer won't catch and chip.



Router Bit. A spiral downcut bit cleanly trims the edging flush with the substrate.





Veneer Edging. Cut narrow strips from the same veneer to get perfectly matched edging.