

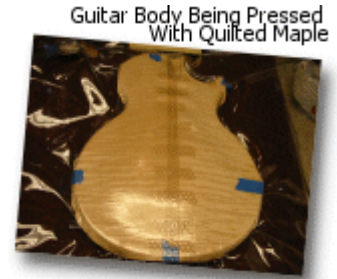
Vacuum Veneering

FOR SERIOUS WOODWORKERS

UPDATED!

Making the Vacuum Bag

The process of making an airtight bag had eluded me for many months. Time after time, I would make a decent sized bag and take all the necessary steps to prepare and seal it, only to notice a tiny leak *somewhere*. It was nothing but pure accident that led me to discover a solution that would seal the leaks on even my oldest bags. The secret? Well...read on.



The vinyl can be purchased at any place that makes boat covers or canvas awnings. If you have a difficult time finding vinyl for the bags, you can purchase vinyl at VeneerSupplies.com. There are a few different thicknesses available in vinyl membrane sheeting. The most common are 20 gauge and 30 gauge. Both will work with similar results but the 30 mil will last considerably longer.

! DON'T FORGET!

1. The vinyl cement is extremely flammable and will destroy your brain if you use it in a poorly ventilated area.
2. The vinyl cement is very much like contact cement. Once you touch the sides together, there is little hope for removal.
3. You will need a heavy duty seam tool for this part.
4. Any area that is to be cemented should be cleaned first with acetone or xylene. Synthetic steel wool or 'Scotch Brite' pads will help.

Items needed:



Heavy Duty Seam Tool



HH-66

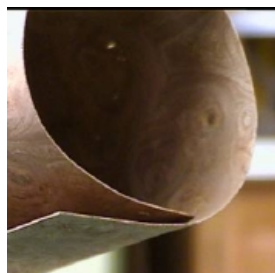


30 Gauge Industrial Vinyl

Small or Narrow Vacuum Bags

For this example, we will be making a bag that is an 18" x 54" rectangle. The standard width on almost all vinyl sheeting is 54". Cut a piece of vinyl that is 36" in length.

Bring the two 54" sides together. Remember, the bag should be about 18" by 54" not 36" X 27". The first two ends should come together so that the result forms a large tube. You do not want the shape to resemble a drop of water (see pictures).



This is the correct bonding pattern.



Do not bond the ends like this.

Using acetone or xylene, clean the surfaces where they will overlap (about 2 inches will do). While the xylene is drying, mentally prepare yourself for the next steps. Try to envision the area where the two ends will overlap. Two inches of overlap will make a nice joint. You will want to apply more cement at the inside and outside edge where the overlap stops. You may find it easier to roll the bag inside-out to get to the inside seam flap. For vinyl, let this dry for an hour or so. If your bag is made from polyurethane, it will take 24 hours to cure. You'll need to clamp the edges together with a couple of flat boards and some spring clamps for 24 hours.

Next, you need to seal one edge of the two that remain in order to make a bag. Lay the bag down so that the first seam that you made (already cemented in place) is centered at the bottom of the bag. Clean the surfaces of the mating edges (at one end of the bag) with acetone or xylene, and proceed with cementing as you did for the first seam. Be sure to use the seam tool to firmly press the corners tight. At the bag end, you won't be able to make the "tube" shape so it will more resemble the tear drop shape this time. If you have an extra piece of vinyl, it would be well-suited to reinforce the end seam. Cut a piece 3" wide that is as long as the bag is wide. Clean the strip with xylene, and press it evenly over the end seam so that equal amounts of vinyl are over each side of the bag.

The results of the cementing *may* not make a 100% air tight seal. Don't worry about that yet. The secret will be revealed soon.

Large or Square Vacuum Press Bags

For this example, we will build a bag that is about 4' x 4' square.

First, cut a 9' (or 108") length of 54" wide vinyl and fold it in half so you have a doubled over piece that is 54" x 54". On one side of the vinyl, use a pen to mark a straight line 4" from the edge from the folded end to the opposite end. Using a pair of sharp scissors, cut the top and bottom (remember, it is folded over) piece of vinyl along the line. When you are finished, you should be left with one piece of vinyl that is 4" x 108" and another piece that is 50" x 108".

The narrow piece of vinyl should be cut in half so it will now be 2 pieces that are 4" x 54". These two pieces will be used to bond the side edges together. Set the narrow pieces aside for now. We will get to them shortly. If this step seems confusing, there is an animation on the website that better shows this task.

Keep the large piece of vinyl folded evenly in half (50" x 54"). Use a straight-edge and pen to mark a line from one side to the other that is 2" in front of the mid point (the crease) of the vinyl. Do this on both the top and bottom side on the vinyl. These are your boundary marks for the vinyl cement at the crease. Open the vinyl up and clean the area between the two pen lines with acetone or xylene. Allow this dry for a few minutes.

For large bags such as this, you will need an assistant for 10 minutes. Apply the vinyl cement in the area between the pen lines (on the inside of the crease). Allow the cement to set up for 2 minutes then fold the bag neatly in half again. It is important that the bag is folded evenly (side to side and end to end) in half. It's probably best to do a practice run of the folding step before you apply the cement. If you find that the vinyl is difficult to manipulate when folding, you can toss a bit of baby powder into the inside of the fold. The vinyl will slide around a bit easier this way.

After the vinyl has been folded over, use a seam tool to press the vinyl cemented area flat. You may need to continue pressing this area for several minutes until the cement fully bonds. The critical areas are at the corners. This area must lay flat and be sealed tightly. You can use wood clamps to hold the corners tight until the cement cures. And again, if you have opted to use polyurethane material, you'll need to clamp the edges together with a couple of flat boards and some spring clamps for 24 hours.

On the left and right side of the vinyl bag, use acetone or xylene to clean the outer 2" edges of the bag. Also clean one entire side of each of the two strips that you cut from the original piece of vinyl. Allow this to dry for a few minutes.

Half of the narrow strip is going to be on the top side (at the edge) of the main vinyl piece and the other half will be on the bottom. So apply vinyl cement to half of one narrow vinyl strip and also to the top of the vinyl bag 2" from the edge (figure A). Allow the cement to set up and carefully place the strip on the edge of the main vinyl. Use a seam roller to bond the vinyl. Roll in a diagonal direction across the seam. This will force excess cement out of the bag.

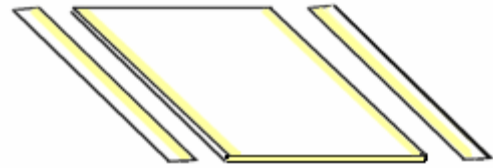


Figure A .

Perform the above step for the other side of the bag. Then flip the whole assembly over and apply more cement to the narrow piece and to the main piece 2 inches from the edge. Fold the narrow strip over and onto the top of the bag (figure B). Press these final edges tight with the seam roller.



Figure B .

Yellow areas show where vinyl cement is applied.

And once again, if you have opted to use polyurethane material, you'll need to clamp the edges together with a couple of flat boards and some spring clamps for 24 hours.

TIPS AND TRICKS

Bag Making Tip from Vacuum Press Builder Edd Fair:

I worked out another method to glue long bag seams. Lay the bag in its folded final position after cleaning the surface with xylene. Start lifting and applying cement in about 12 inch segments as you lift the edges apart. This takes two people. The front person lifts and glues. The second person squeegees the seam with a seam tool. Move forward at a slow pace to allow cement to kick just enough to get initial bond. After we "wet" glued the seam, we clamped the seam to the bench with a 3 inch wide strip of plywood and let it cure for about ten minutes.

Mounting the Valve Stem

To make things easy, I offer an "updated" valve stem assembly at VeneerSupplies.com. This 7 piece kit is the best way to connect vacuum bags to the vacuum hose. Each stem has air channels cut from the center intake to direct airflow quickly from the vacuum bag. The kit includes 1 zinc-plated brass valve stem, 2 zinc-plated heavy duty washers, 2 medium density PVC grommets, 1 zinc-plated washer and nut.



The grommets are attached to the washers with an acrylic adhesive which prevent them from creeping if the vacuum bag stretches. With only a bit more than hand pressure, this combination also prevents elongation of the opening where the stem is placed. No cementing is needed and because of this, a valve stem can be moved from one bag to another if needed.

1. Cut a 3/8" hole near the top center of the vacuum bag to accept the valve stem body.
2. Slide one of the grommet/washers onto the valve stem body with the black side facing up.
3. Insert this portion of the assembly through the hole in the vacuum bag.
4. Slide the other grommet/washer onto the valve stem with the black side facing down (against the vinyl).
5. Attach the washer and tighten the nut with a 9/16" wrench. One complete turn past standard hand/finger tightening will suffice.

The Secret...Finally Revealed

As stated earlier, the bag is probably not 100% airtight. Set up your bag and attach it to the system. Place a platen and/or breather mesh in the bag. Clamp the bag shut, and turn on the press. When at least 18" of Hg is achieved, use the HH-66 vinyl cement to "paint" the edges of all previously sealed seams. Like magic, the cement will be pulled into any leaks. Turn the unit off and let the cement cure over night.



The cement is extremely flammable and will destroy your brain if you don't use it in a well ventilated area.