

# Simple and Easy Mold Making

by:

Jim Schumacher

A.K.A “[plantman](#)”

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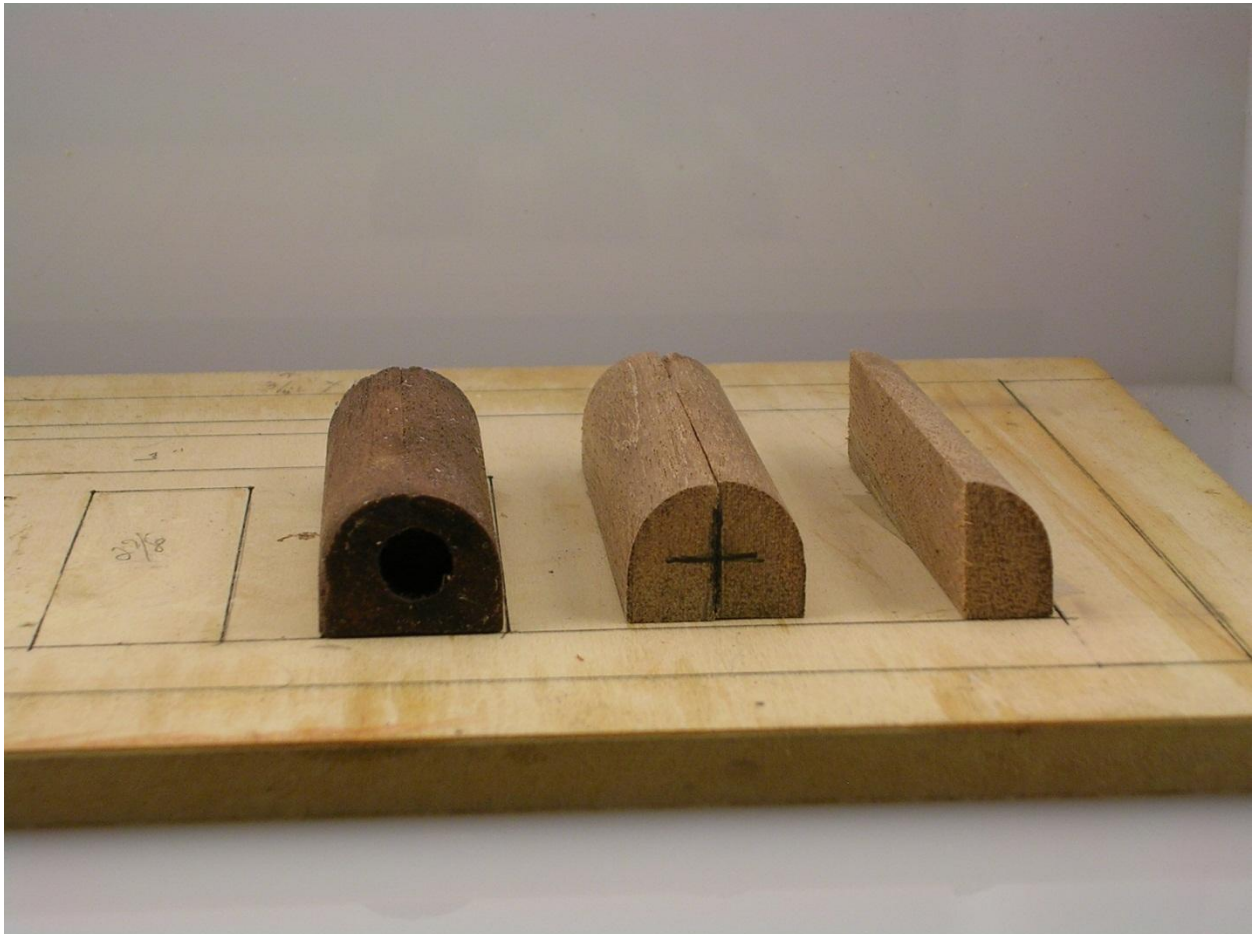
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I am going to show you how to make your own casting molds using my simple, versatile, and inexpensive method. Believe me I have tried them all and this is by far the easiest. With this method you can make as few or as many pen or other blanks at a time as you need, whatever style that you want, and save on the amount of resin you will be using. Most of the materials can be found in your home or workshop.

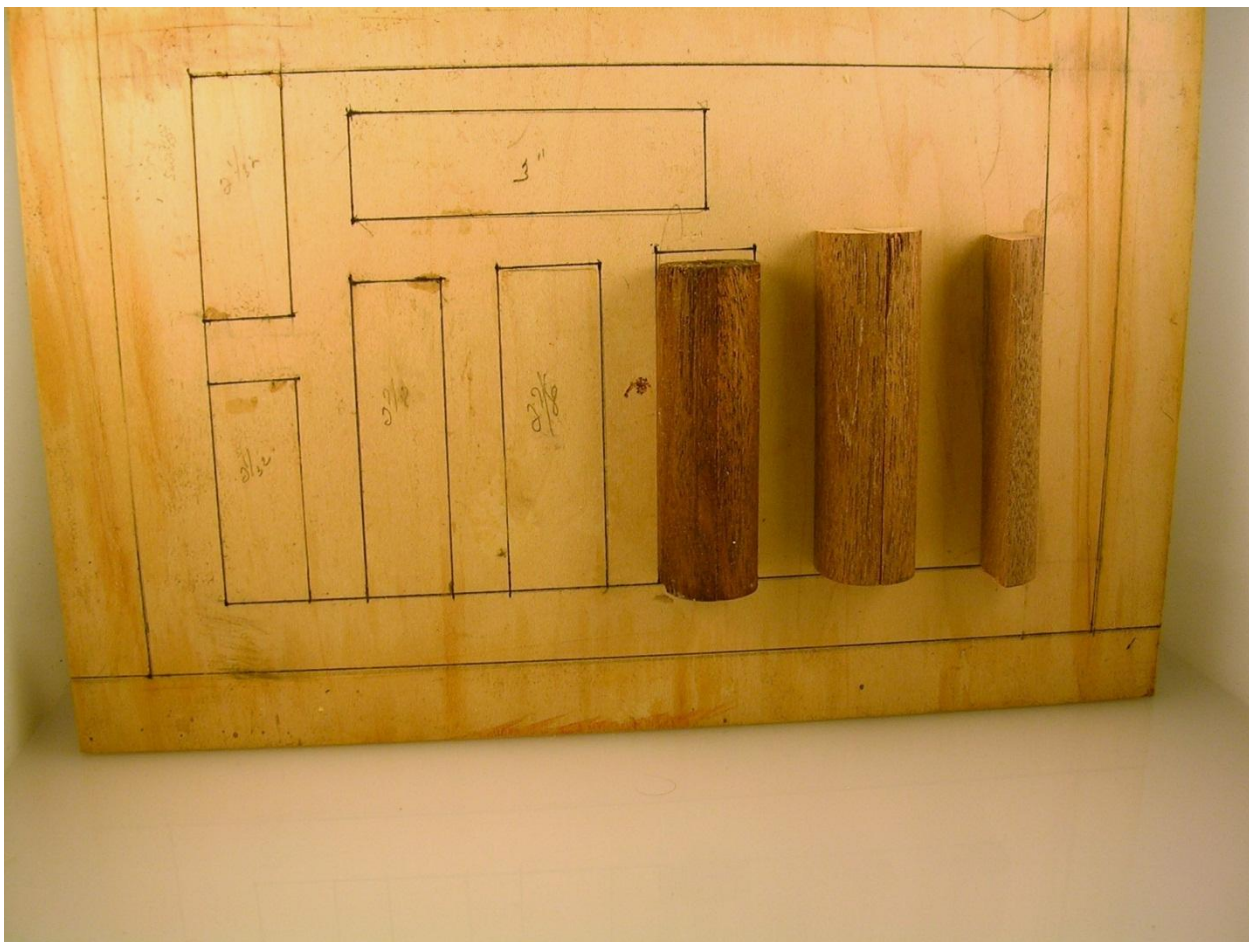
## Materials that you will need

Go to your local lumber store and look in the molding area for Base Shoe Molding. It's used on the bottom of base board molding to hide the unevenness of floors. Usually comes 8' long by 7/16<sup>th</sup> wide by 11/16 high. Try to get Luan Mahogany if you can. Base Shoe Molding is on the right of photo.



If you have a router you could take a piece of  $\frac{3}{4}$  inch wood and cut a half round on each side, then rip it to 1 inch wide. The shoe molding is inexpensive; straight grained, and will save a lot of time. Also while you are there pick up a piece of wood  $\frac{3}{4} \times 1 \times 4'$  (true 1 inch wide) for the sides if you don't have something at home. You will need a base for your mold  $\frac{1}{2}$  -  $\frac{3}{4}$  inch thick and the size to be set by the number on different blanks you wish to cast. Search the house or shop for the following items. Saran Wrap, Q-tips, 2-sided Scotch Tape, drill size guide, drill bits, Nonstick cooking spray, gram scale, sonic jewelry cleaner, latex gloves, clamps, some type of mask, eye protection, strong stir stick at least 2' long, toweling, plastic bag to protect your work surface from drips and spills. Trust me on this last one!! Some lined or graph paper. Mold casting material of your choice. It helps to order this ahead of time so it's there when you are ready to pour your mold.

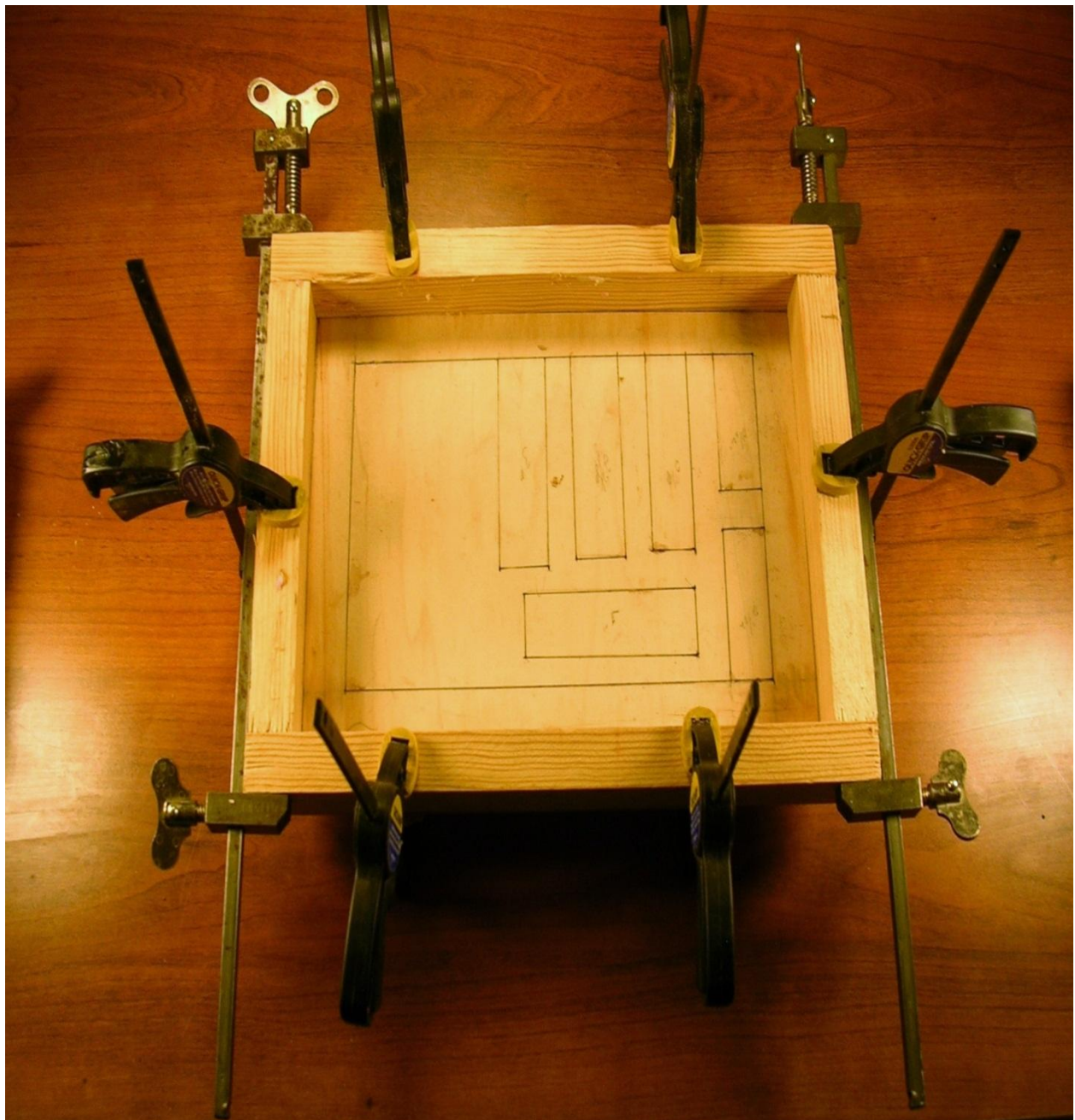
### Plan out what you want to make and how many





Make a list of the pen kits you will be using or any custom length tube you will need. Now measure the length of the tubes and add  $\frac{1}{4}$  inch to the length of each tube and write it down on your list next to the pen kit name you will be using. Some tubes are  $1\frac{7}{8}$  some 2 some are  $2\frac{1}{8}$  inches. For these tubes add the  $\frac{1}{4}$  inch to the shortest tube. This extra  $\frac{1}{4}$  inch in length will allow you to cast all three in the same mold space. Next I lay out the tubes on graph paper, add the  $\frac{1}{4}$ ' to the length and mark this point. Now mark your paper to make the sides of your blank  $\frac{3}{4}$ ' wide. Figure out how many different blanks you want to make. I will usually cast at least 2 complete pens of each size in a mold. Remember the 2 piece pens need 2 blanks each and may have different lengths and tube sizes. The mold in the photos will cast from 1 to 10 blanks at a time in 4 different size tubes and varying lengths. Now cut out a template from your paper for each size pen blank and rough draw them onto another sheet of paper, or onto your material you are going to use for your base, in any order to use up the most amount of space, allowing at least  $\frac{1}{2}$  inch or more between blanks. When your happy with the arrangement, measure your layout add  $1\frac{1}{2}$  inch to all sides. This allows  $\frac{3}{4}$  inch for your wooden sides, and  $\frac{3}{4}$  inch thickness for your mold. This will be the size of your base.

### Making the mold box



To make my 10 blank mold box, I needed a base that was  $10\frac{1}{2} \times 7\frac{1}{2}$  inches. This base can be cut out of anything you have on hand, MFD, plywood, solid wood, or whatever. The base need not be cut to exact measurements, but being square really helps when it comes to clamping the corners together. Once you have your base made, cut the two long sides out of the  $\frac{3}{4} \times 1$  (true 1 inch wide) board and clamp them to the top of the base with the 1 inch side standing up. This will give you  $\frac{1}{4} +$  inch of material for the bottom of your mold. Measure the space between the long sides and cut the remaining  $\frac{3}{4} \times 1$  inch board to fit the spaces. Unclamp the sides and cover the base and sides of the mold box with Saran wrap. This keeps the mold mix from sticking to the wood, and also makes the whole system reusable with an easy cleanup. I know you are saying “ben there, done that”. So what’s so different about your method? Please read on.

### Making the blank plugs for your mold



Here is the first time and money saving difference. Take the Base Shoe molding you purchased from the Home Center or Lumber Yard and cut two pieces the length of your first tube +  $\frac{1}{4}$  inch. Glue these together back to back with wood glue and clamps or CA glue and accelerator if you are like me and can't wait for glue to dry. Now you should have roughly a plug the length of your tube +  $\frac{1}{4}$  inch, by  $\frac{3}{4}$  inch wide, by  $\frac{11}{16}$  of an inch high, with a round bottom that will save on the amount of resin needed to fill the mold. Refer to first photo center plug. Look at the end of the plug. You already have a center line in the glue joint, so measure up  $\frac{3}{8}$  of an inch from the flat surface and make a mark

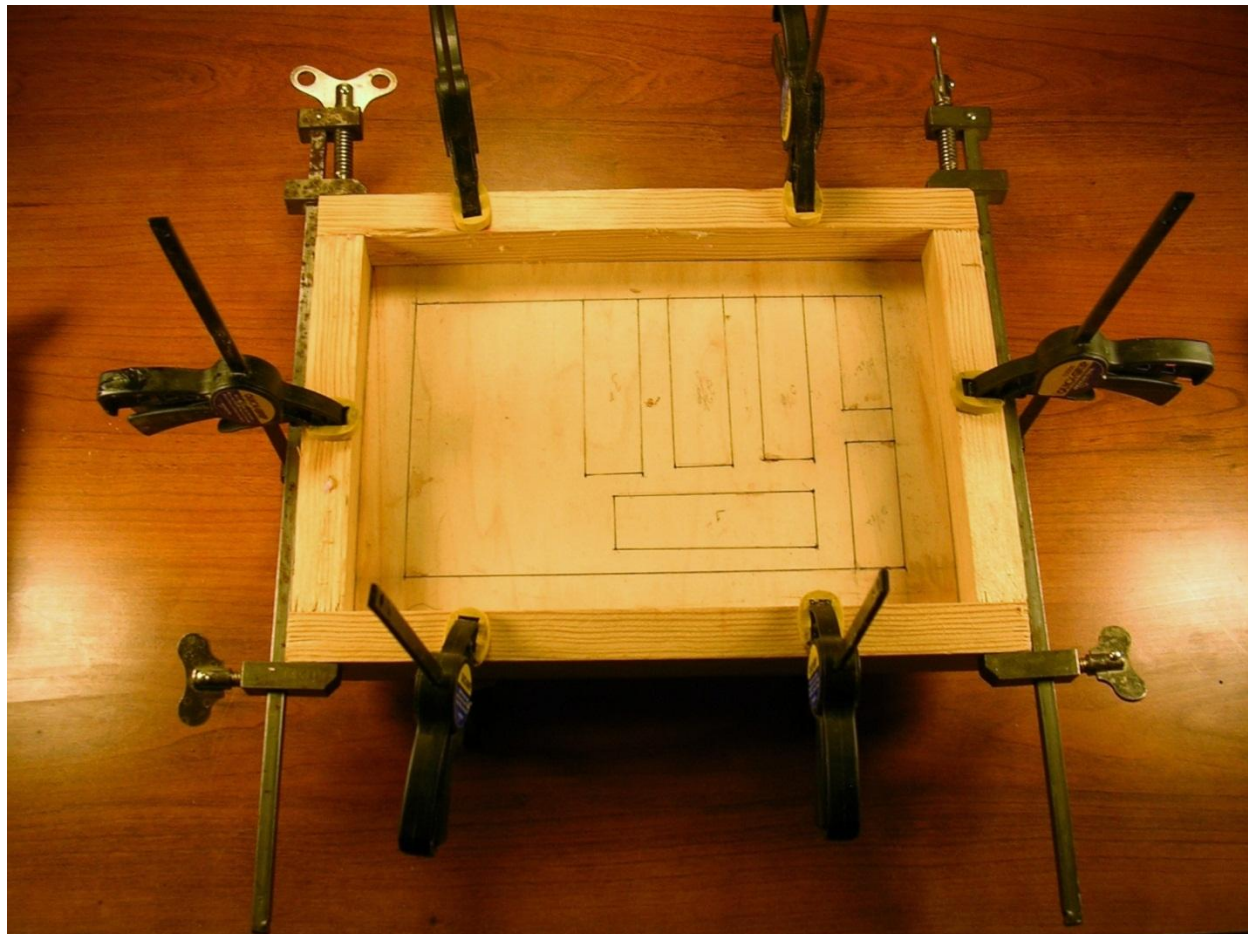


across the glue line on both ends of the plug. This is your center point for the drill bit. Mark both ends of all remaining plugs that you have glued up. With a center punch or small drill bit make a starting hole in your plug. This will keep your drill from wondering off center. Again this need not be perfect, but the closer the better. If you have a letter and number drill set, select a bit slightly smaller than the inside dimension of your tube. If you don't have the big set of drills, just use a drill bit that slides easily into the tube from your pen kit. We don't want a flat bottom hole, so DO NOT use brad point drill bits for these holes!! Jobber drill bits (the ones whose ends come to a point) will be fine. The pointed knobs left in your mold will make it much easier to get the tubes in and out of the mold. Place a piece of masking tape about  $\frac{1}{4}$  inch above the first full flute on the drill bit or set the depth stop on your drill press for  $\frac{3}{8}$  inch. Drill all the holes in the plugs to the correct size, making sure the hole runs parallel to the length of the plug. At this point I will lightly sand the plugs and make sure the holes are clear of any wood fibers. Use a sanding sealer to fill the grain and a coat or two of poly finish if you wish. See first photo left plug.

### Setting up your mold

Take your base board and set one of the two long sides on it. Clamp this down if you want to be able to change the size of your mold at some point in time or drill and screw it from the bottom. Next take the shorter sides and clamp them to your long sides to make a tight corner. Clamp down to your base and screw from bottom if you want. Follow with the last side, keeping the corners and base as tight as you can. I usually use clamps to hold the tops of the corners tight or add a screw. If you chose to

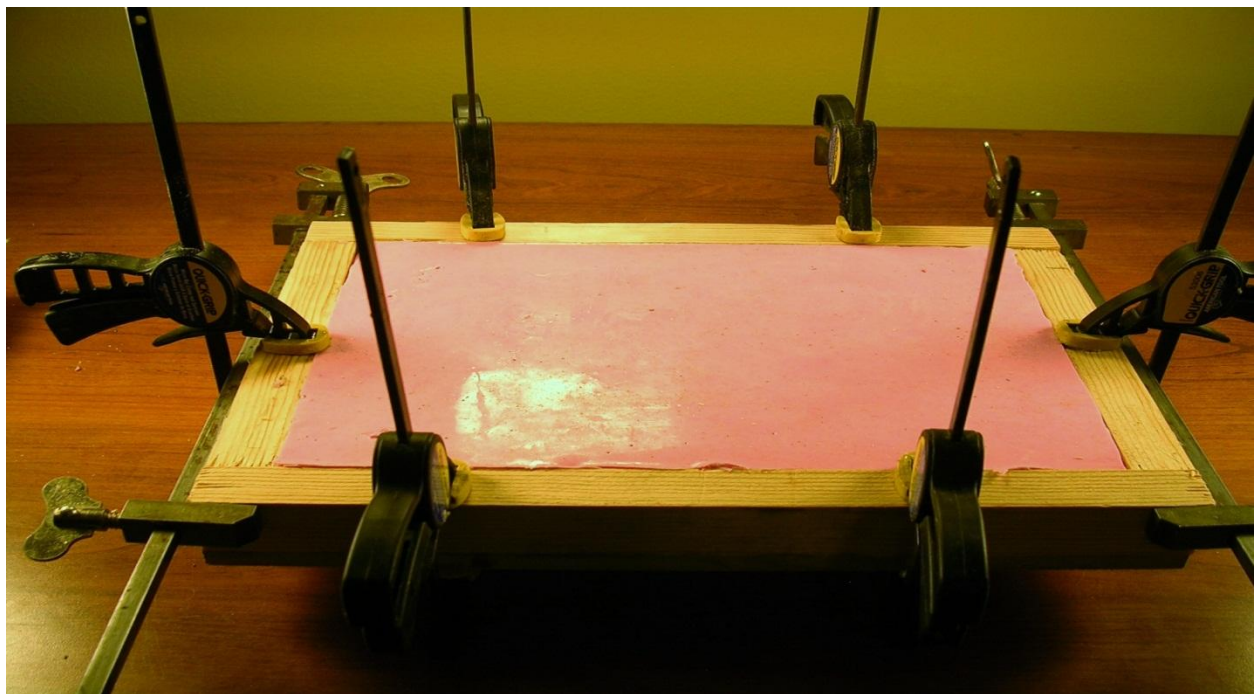
screw your box together, you no longer need the clamps. Place your plugs on the base and arrange them in any manner that gives you the greatest number of plugs. This is the only part of the process that has some rules. Keep all your plugs  $\frac{3}{4}$  of an inch away from the sides and at least  $\frac{1}{2}$  inch from each



other. When you are satisfied with your arrangement take one plug at a time and apply the two sided tape to the flat surface. Use a Q-tip to spread a lite coat of Vaseline around the inside of the holes and on the end grain if it looks open. Press the plug back in position on the base. Do this with the rest of your plugs. If you don't like the arrangement, just pull up the offending plug and redo it. Now you have a completed reverse mold. See photo on page Four.

### Product I use to cast the mold

Now you are ready to pour your mold. I have tried most of the ways suggested to make molds for casting blanks. From copper and plastic pipe to Tupperware to silicone in tubes, but nothing has worked as easy or as well as the method I just described. This system is simple; flexible in size, reusable, and inexpensive to make. The next question may be what product do I use to make my molds? Well, after much searching of the internet, I found a product that would meet the requirement I needed. The product is made by Smooth-On (<http://www.smooth-on.com>) called Mold Max 30. It is a tin-based or condensation-cure silicone that cures at room temperature to a flexible, high tear strength rubber, with a tear-strength of Shore 30A, and has a working time of about 45 minutes. Tin-cured silicones can be used for casting polyurethane, epoxy and polyester resins, waxes, all gypsum products and low-temperature metals. I buy a trial size that is a 2 part mix with a 10 to 1 mixing ratio, weighing 2.2 pounds plus catalyst and costing \$25.47 + shipping. This is exactly enough to fill this size mold. There site also has a program that calculates how much product you will need for your project, plus videos and tutorials on how to cast anything big or small. They carry an unbelievable amount of products, and offer a free catalog



### Be prepared

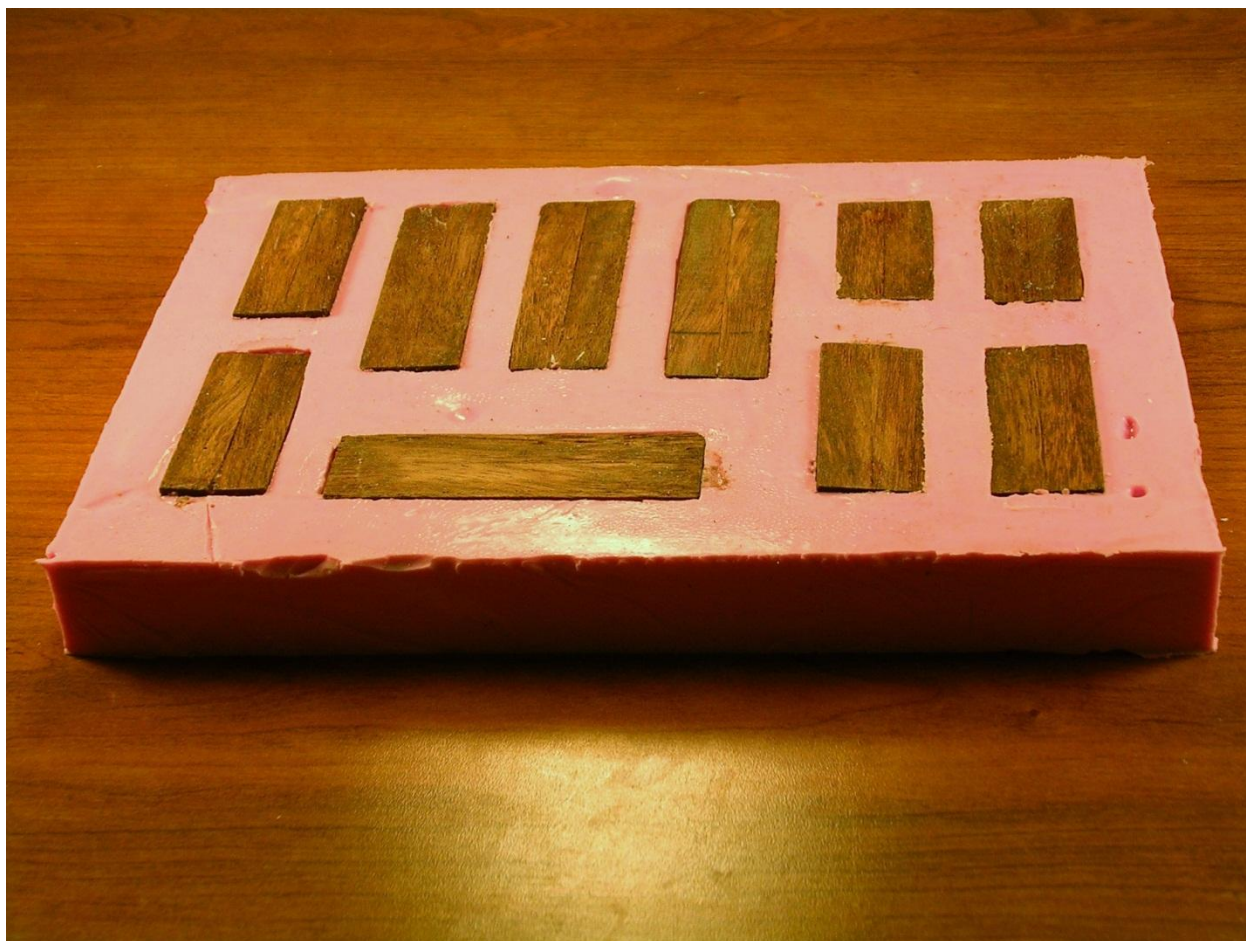
First thing on our to-do list is to be prepared. Do we have protection on our work surface and toweling in case of a spill? How about eye protection, particle mask, latex gloves, and proper

ventilation? Measuring cups, strong stirring stick, tooth pick or dental probe, cooking spray, mold box and plugs, and a level? You will need something to weigh or measure out your products. I use my wife's gram scale to measure, and her ultra-sonic jewelry cleaner to remove air from the silicone. Hope she doesn't see this part!!

### Now we can pour our mold

We can start our process by measuring out our two part mixture. If you don't have a pressure pot, as I don't, run hot water and fill the jewelry cleaner to the fill line. If you have one that is heated, turn on the heater and ultra-sound. Place the measured out silicone in the cleaner for about 20 minutes. If you are doing only a few plugs you may have to put a weight on top of the cup to keep it from floating and tipping. Let's turn our attention to the mold box while we are waiting for the silicone to de-gas. Reach for your cooking spray and thoroughly spray inside the base, sides, plugs, and inside the holes of your plugs. I set a garbage bag on my work area to protect the top and give me somewhere to put my trash when I am finished. Set your mold on a solid surface and check that it is level in all directions. For this size mold I leave the silicone in its container, and just add the hardener to it. Otherwise use the 10 to 1 ratio mix or whatever your product calls for if your mold is a different size. When measuring it's better to have too much than to be a little short. Make sure that the stirring stick is long and thick enough to give you some leverage and keep your fingers out of the mix. Don't even ask why I put that sentence in there!! STIR SLOWLY from the bottom up, making sure you get all around the bottom and sides. This will keep air from being introduced into the mix. Your mixture will turn from milky white to bright pink. You will have about 45 minutes of working time, so there is no need to feel rushed. Remember the old saying, "The faster I go, the behinder I get". When you feel the mix get a little stiffer, or no more white is coming to the surface, pour it into the mold until you cover the holes in the ends of the plugs. Stop pouring and take your mixing stick and force silicone into the holes to displace any air. Resume pouring until you fill the mold to the top. Again take your stick and force silicone into the holes. This product is self-leveling and any remaining air bubbles should rise to the surface and pop themselves. Remember this is the bottom of your mold, so looks aren't that important. I usually will check every 5 or 10 minutes for large air bubbles and burst them with a dental pick or tooth pick. The mold will set up in about an hour depending on the temperature and humidity in your shop. You can move the mold to free up your work area, just try to keep it level and put something underneath it in case of some seepage. Remember this is a condensation-cure silicone, and draws moisture out of the air to cure. If you see any white areas after you pour, try to mix them in if possible, but don't worry about them, the surrounding mix will cure these areas. I let the mold sit overnight or 24 hours. Remove the clamps or screws and take the sides off the base. Wipe off the bottom of the mold and set it on some toweling to absorb the kitchen spray. Peel the mold off of the base and let dry for a day or two. Take a Stanley knife and clean up any silicone that has seeped under your plugs or over the top of the mold and give it a crisp edge. Photo below shows mold with plugs. Don't forget that you have the silicone knobs inside the plugs. So when removing the plugs, pull out the side of the mold until the knob pops out, lift the plug from that end, and slide the plug out. When you insert your tubes into the mold to cast, pull on the side of the mold and insert the tubes on the knobs. This is a pure silicone rubber mold and needs no mold release. If you are not sure of the product you are going to use, spray with Pam.





### Summary

So what are you gaining from this tutorial that you didn't already know? The building of the mold box is straight forward and almost the same as everyone before has shown, except that it can be reconfigured into any shape or size you want by simply reclamping the sides or ends and reconfiguring the plugs. The Saran Wrap I have seen used before, but it sure makes it so much easier to separate and clean up the sides and base. I have shown you a new method (at least I have never seen it before) of making plugs for your mold that are easy, inexpensive, reusable, and can vary in any size you need. No need to add spacers to hold your blanks off the bottom or keep them level, nor do you have to plug the ends to keep the resin from seeping in, or add BBs to keep them from floating to the surface. By adding the extra  $\frac{1}{4}$  inch to your tube length you are able to cast several different size tubes in the same space. With the round bottoms and no tabs between blanks you will be saving a considerable amount of resin. I have no trouble removing blanks from this mold. You have the convenience of pouring just one blank or a hundred at a time if you choose. Everything I have made is reusable, so you only have to do the woodworking part once. When you are finished with the mold box and blanks, just store them away until next time. This system can be used for pen blanks, knife slabs, gun grips, anything you can think of. As for the Smooth-On products, I can only say, they are superior to any product I have tried so far. You may notice that my molds look quite similar to the ones offered on the internet. That's because they are made of the same or similar

material. Last, but not least, is the cost. I have made a mold that is capable of producing 1-10 blanks for 8 different pen kits in 4 tube sizes of varying lengths, all in one mold, for under \$30!! (Not including shipping.) If you have any questions or comments, E-mail me at [plantman7720@aol.com](mailto:plantman7720@aol.com). Hope this helps someone. Finished mold is below.

Jim S

