

Making & Using Silicone Molds for Prototyping Snap Knife Grip Molding

By Don Kesinger

Objective

To mold soft rubber grip on the Super Snap Knife and bond it to the metal handle.

Selecting Materials

There are a number of materials available for casting. In the past I have used self skinning foam Urethane and aluminum filled epoxy. For this particular project I have chosen liquid Urethane and castable Silicone. Silicone was chosen because it doesn't stick therefore mold release is not required. Urethane was chosen because it is available in a wide range of hardnesses. It is available from very soft to click hard. I chose medium hardness which is about 90 durometer. They both set up fairly fast although I let them set overnight. The cost of materials was about \$70.

Where to Buy

Look in the yellow pages under Plastics (Castable) or Art supplies. I bought these supplies at Plasti-care on South Sante Fe in the Denver area.

Mockup Materials

One of the most outstanding things about this process is that the mockup can be made of almost anything that will hold a shape. Cardboard, foams, metals, wood, and maybe soap bars.

Mockup Methods

For my particular project I first made the metal Part. Then I went to the hobby shop and brought basswood for the proper thickness. In this case I bought 1/16" and 1/4" thick. I needed to make a wooden grip exactly like I wanted the rubber grip to be. I glued the wood on with contact cement. I sanded, and milled until I had it the way I wanted. Then I put on a light coat of varnish to fill wood pores and make it very smooth. After one more sanding, I had a mockup.

Mold design

The first thing needed is a container for holding the mold material when it is liquid. I chose to make



a small wooden box that would be exactly the right size. This would require less expensive molding material. Next I needed to suspend the metal part so it isn't touching any sides of the box. I placed a wire across the front of the piece and a small headless nail to hold up the backend of the part. I was ready to pour the mold.

Bubbles

The enemy of this process is bubbles. If there are bubbles in the mold there will be bumps in the final pouring. If there are bubbles in the Urethane grip when poured there will be holes in the final product. This can be avoided by mixing the chemicals very slowly. I make it a point to paint the inside of the mold with Urethane to avoid bubbles. After painting the outside of the mockup with Silicone, the mockup was placed in the box and Silicone was carefully poured around it. I let it set over night. Afterwards I cut a slit down the side to remove the metal part.

Pouring the Mold

First the mockup had to have the wood removed. I did that by placing the mockup in a plastic bag filled with lacquer thinner. The next morning the wood had fallen off. I lined the box with plastic film to make sure that the silicone didn't stick. The mold was readied by setting it up on end. After the box end was removed the mold was pulled up in the box and two holes were drilled where the bottom of the pour was going to be. The holes were to keep from trapping air in the bottom when the Urethane is poured.

Pouring the Sample

I poured the Urethane very slowly until the Urethane started coming out the air holes in the bottom. Then I slid the mold down in the box so the Urethane couldn't run out any more. I put some tape around the box so the split couldn't open up. After setting all night I had a good part.