

Silicone Rubber Sculpture Techniques

by [Thinkenstein](#) on October 25, 2010

Table of Contents

Author: Thinkenstein	2
License: Attribution (by)	2
Intro: Silicone Rubber Sculpture Techniques	2
step 1: Silicone Rubber	2
step 2: Palette Knives	3
step 3: Syringes	4
step 4: Special Needle Tips	5
step 5: Details with Syringe Extrusions	6
step 6: Small Figurines	8
step 7: Styrofoam and Silicone	11
step 8: Silicone and Cloth	11
step 9: Hollow Silicone Sculptures	12
step 10: Mattress Foam and Silicone	14
step 11: Using Molds	15
Related Instructables	16
Advertisements	16

Author: Thinkenstein



Author: **PRO**Thinkenstein [author's website](#)

I'm a refugee from Los Angeles, living in backwoods Puerto Rico for about 35 years now and loving it. I built my own home from discarded nylon fishnet and cement.

License: Attribution (by) **BY**

Intro: Silicone Rubber Sculpture Techniques

Silicone rubber is not a common sculpture material. It is sticky, puts off ascetic acid fumes as it cures, and you can't use your bare hands to work with it. This instructable is about various uncommon techniques I have developed to work with it.

Silicone rubber is normally used as a sealant for windows, etc. You can buy it in 10.5 fl. oz. grease gun cartridges at a hardware store for around \$4, so it is not prohibitively expensive to work with. It comes in a limited variety of colors, such as black, white, brown and clear. I always buy clear silicone and colorize it myself with powdered pigments.

You can get some cheap powdered pigments that are used for colorizing cement at some hardware stores. A wider range of colors can be obtained from some art supply dealers. (Google search "artist powder pigments" for some online sources.)

Here you will find photos of some of my silicone rubber sculptures and brief explanations of how they were made. Most of the sculptures were built up directly. Others were made indirectly, using molds. The belly dancer below was a complicated piece made with several molds. I will explain it in more detail later.



step 1: Silicone Rubber

I don't know the ecological side effects of manufacturing silicone rubber, or its eventual decomposition. When cured, it is non-toxic. It comes out of the cartridge as a sticky paste, smelling of ascetic acid (vinegar), and it cures fairly quickly, turning into a rubbery substance.

It sticks like crazy to some non-porous materials, like glass, metal, and more silicone rubber. It doesn't stick well to other materials, like wood and some plastics. My preferred work surface is polyethylene plastic, because the silicone peels right off of it when it hardens. Plastic trash bags are polyethylene plastic and can be stretched out over a board or table as a work surface. I bought some thicker polyethylene years ago that didn't need stretching. Recently, I found thick polyethylene plastic kitchen cutting board, which I plan to use as a work surface in the future.

If you get it on your skin, wipe it off right away. It is not immediately aggressive, but skin contact for too long can cause your skin to peel.

Silicone rubber has very good longevity. As a sealer, it is guaranteed outdoors for 30 years. An indoors sculpture should easily last a lifetime.



Image Notes

1. This is the piston cup that pushes the silicone through the cartridge.

step 2: Palette Knives

The palette knives used by painters make very useful tools for spreading silicone rubber. They are like little plastering trowels. Some are made of plastic and some are metal. Some of the silicone material always seems to harden up on them, so you have to scrape them occasionally with a knife.

You can squirt the silicone directly from the cartridge onto the piece you are making and spread it around with a palette knife. You can also squirt clear silicone onto a disposable paper palette and use the palette knife to mix powdered pigments into it for color effects. Do it quickly, because the silicone hardens fast.

You can extend your working time for details by packing the silicone in a syringe with a palette knife and then extruding from the syringe. This is described in the next step. The palette knife is one of your most useful sculpture tools for silicone rubber.



step 3: Syringes

In air, the silicone starts to harden quickly. To extend your working time for details, it is sometimes useful to colorize the silicone and pack it right away in another closed container, a syringe. Air won't get to the mass inside the syringe, and you can extrude what you need out the end. It's like a grease gun cartridge in miniature.

You can buy large syringes at pet shops or veterinary supply stores. With standard syringes that have metal needles, you can't use the needles they come with for detailed work, because the diameter of the hole is too small to push the silicone through it. You can make disposable plastic needles with larger holes out of some cotton ear swabs with plastic stems, or you can use the syringes without needles. See the next step for how to make the disposable needle tips.

Recently, I found these curved plastic needle syringes available at a pet store. They are used for feeding birds and baby animals. The conical tip can be cut at different locations for different size extrusions, eliminating the need to make special needle tips.

The rest of the syringe consists of a clear plastic barrel and the piston part with a rubber head. They can be cleaned and reused many times, but eventually they will become unusable and need replacement. I made some special cleaning tools out of wire to clean out the nozzle end barrel. A straight, or curved wire cleans the nozzle and one shaped like a miniature hoe snags silicone inside the barrel. The syringe barrel is polyethylene plastic, and the hardened silicone doesn't stick well to it. Pumping the plunger in it a couple times cleans much of it out. The plunger is cleaned just by wiping it, or peeling off any rubber build-up.

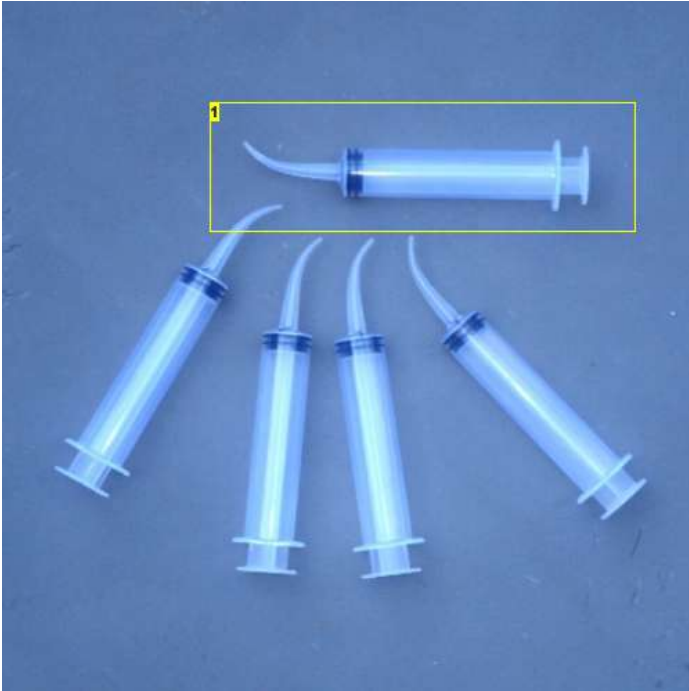


Image Notes

1. Syringe from a pet store. The conical tip can be trimmed at different spots to make larger diameter extrusions. Because of the curve, cleaning might call for a curved wire. With this kind of syringe, you don't have to make special needle tips from cotton swabs.

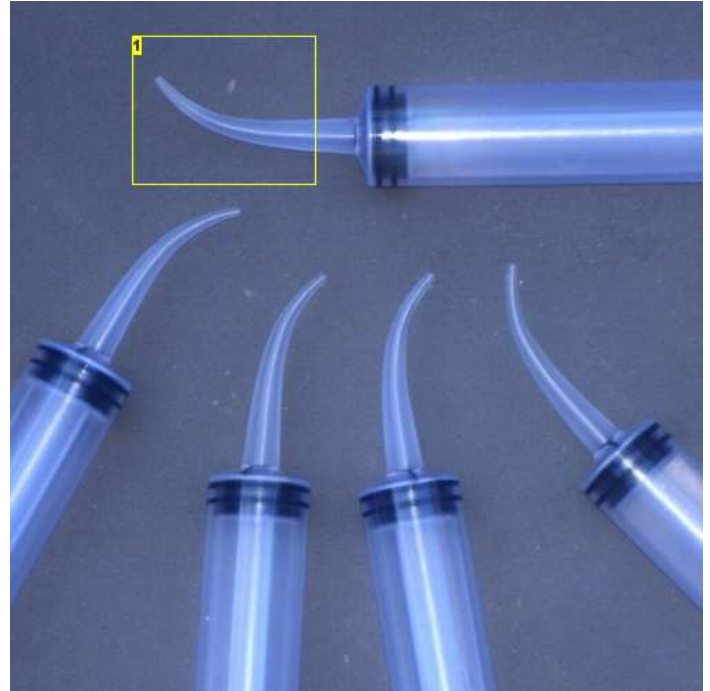


Image Notes

1. Trimming the plastic tip with a knife at different points results in a different size extrusion hole.

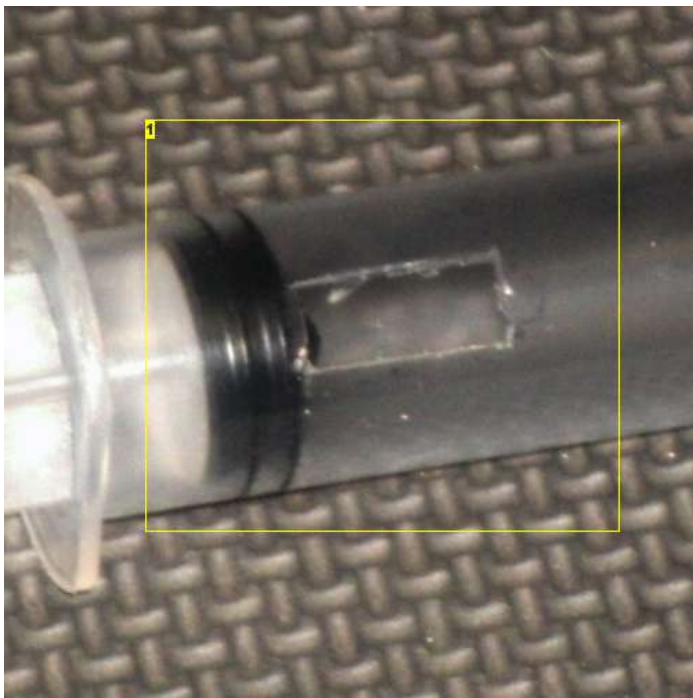


Image Notes

1. A hole is cut in the side of the syringe for packing it with a palette knife. Some air is left at the front of the syringe. The hole is covered with the palette knife and the plunger is pushed forward, expelling the air from the front, while sealing the air out from behind.



Image Notes

1. The filling hole in the side of the syringe.

step 4: Special Needle Tips

Q-Tip brand cotton swabs use fibrous material for their stems. They are probably top of the line for cleaning ears, but for making syringe tips they are useless.

Cheap cotton swabs use a piece of small diameter plastic tubing for the stem part. Years ago I used this material to make special needle tips for my syringes. I removed the cotton from the ends and ran some fine wire through the tubing. By carefully softening the plastic over a low propane torch flame and pulling the ends of the tubing in opposite directions, the center area elongated and reduced in diameter until it reached the wire inside.

After the stretched plastic cooled, I cut it with a sharp X-acto knife to make two needle tips. The reduced diameter part would fit through the hole in the end of a syringe, but the full-diameter part would jam in the hole. I used it as much as I could, and when it clogged I just discarded it and loaded another.

In order to do photos for this instructable, I tried to make more disposable needle tips today and failed. The tubing wall is thinner than what I used before. These photos will give you the idea of how to make them, but the needle tips shown are bad examples of what they should be. You will have to find better quality cotton swabs to make your needles out of.

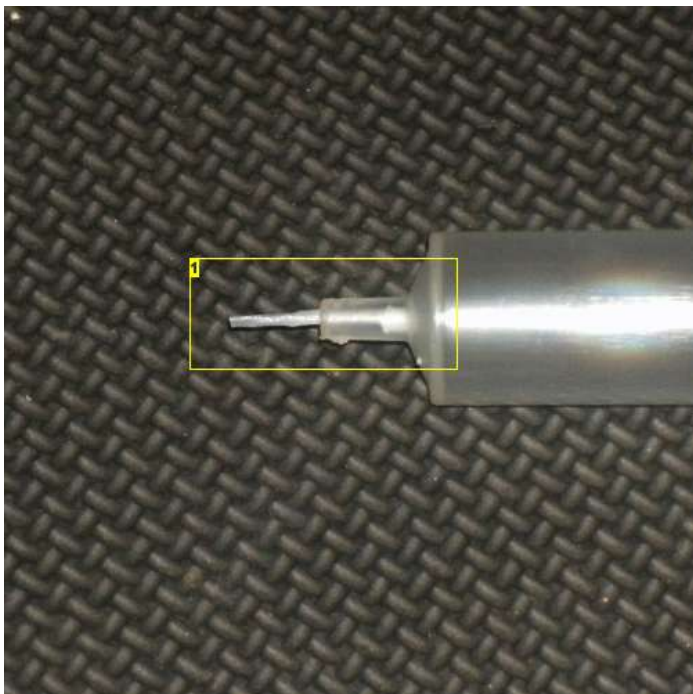


Image Notes

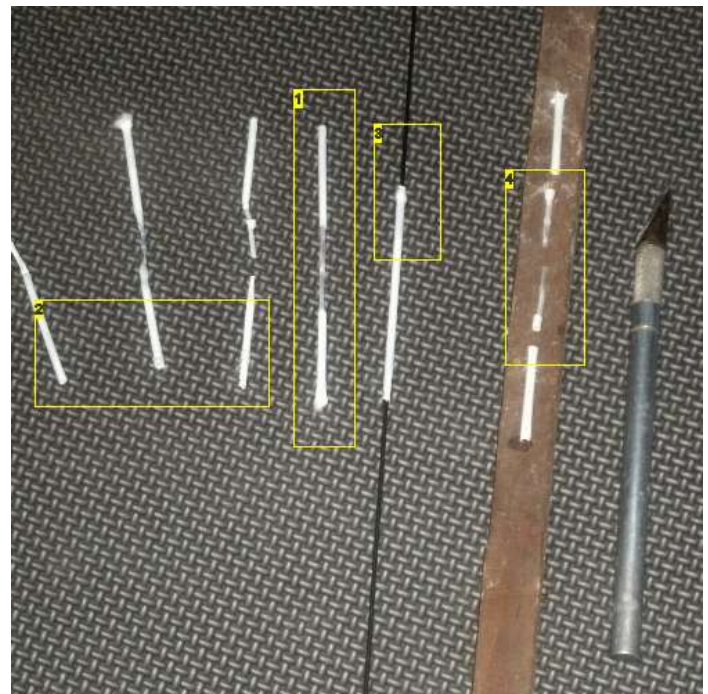


Image Notes

1. This is a bad example of a plastic needle tip.

1. This is more or less what a successful stretching job should look like.
2. These are total failures.
3. The tubing on the wire before heating and stretching.
4. You can cut two needles from each reduced section of the tubing.

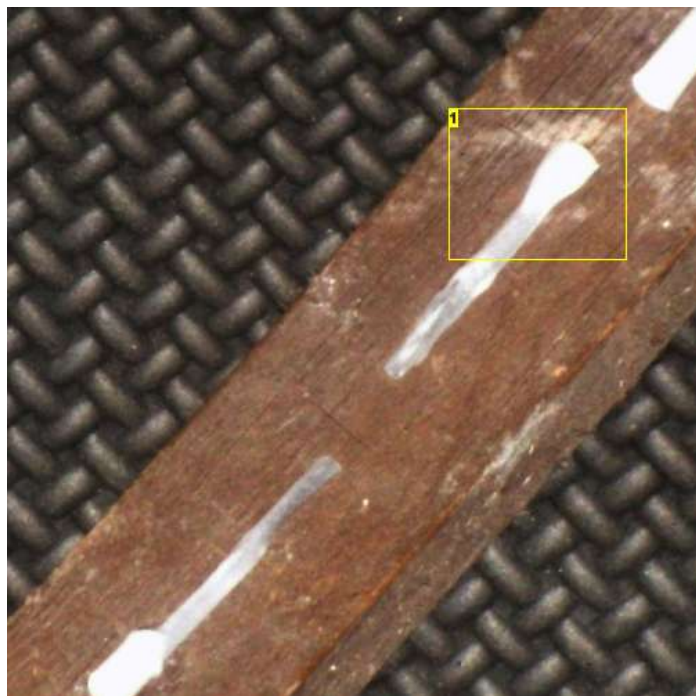


Image Notes

1. The full-diameter part jams in the hole at the end of the syringe.

step 5: Details with Syringe Extrusions

This is a fancy "taxi horn" like antique cars used to have. You squeeze the rubber bulb and the air makes a reed vibrate, making the honking sound. The colors are all silicone rubber with powdered pigments, not paint.

I made the bulb over a toy balloon. After the silicone hardened, I popped the balloon to remove it.



Image Notes

1. These are all syringe extrusions. The inlaid "jewels" are clear silicone mixed with glitter. I spread it down on a smooth polyethylene surface. When dry and peeled up, it had a smooth polished surface. The material was easy to cut with scissors and adhere with a syringe and more clear silicone.

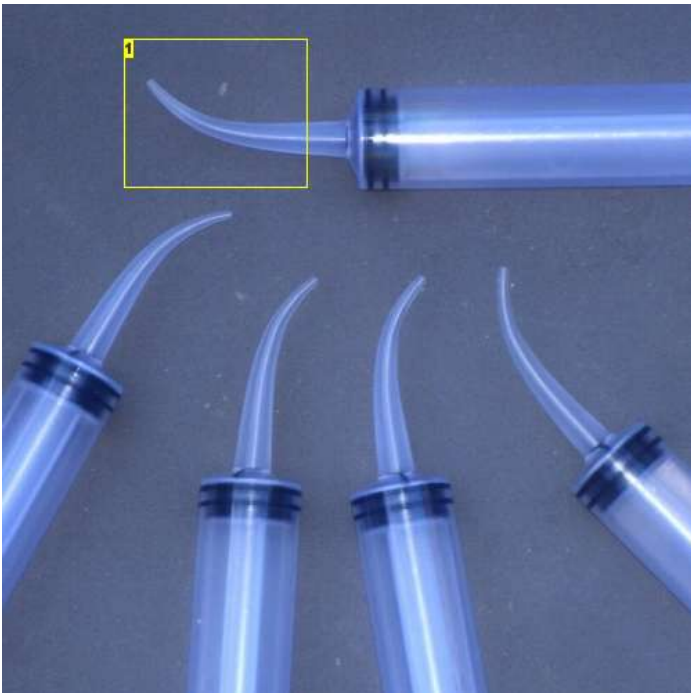


Image Notes

1. Trimming the plastic tip with a knife at different points results in a different size extrusion hole.

step 6: Small Figurines

Most of these small figurines are solid silicone rubber, built up over silver soldered stainless steel welding rod armatures. Where wooden bases are used, holes were drilled and the armatures extend into the wood.

Perhaps, I have been too enamored by bronze sculpture. I seem to have done a lot of imitation bronzes out of silicone. Years ago I got a can of powdered bronze from a marine supply store. Mixing that in with silicone makes it look like bronze.

The bronze powder is made by an interesting process. There is something like an arc welder that has two rolls of wire, in this case bronze wire. The wire is fed to where they meet and an electric arc melts them. A compressed air jet in the liquefied area blows out a spray of micron size particles. You can "paint" things, like an apple for example, to build up metal molds. You can even spray paper and it won't burn, because each droplet of liquid metal contains so little heat. If you just spray the metal into a room, the droplets cool and fall as dust to the floor where the powder is collected.



Image Notes

1. Sitting and Thinking. Three armature wires penetrate the base at the seat and the two feet. If you can get three points instead of just two, it is stronger. Because of silicone's light weight, you can usually get by with just the two feet.



Image Notes

1. This Banana Farmer carrying a raceme of bananas is about 6 inches tall. The base is wood.



Image Notes

1. Another Banana Farmer, about 6 inches tall.



Image Notes

1. Hiker with a driftwood base. The background is a rather ungraceful photoshop job.



Image Notes

1. A Hippie Dancer, about 6 inches tall on driftwood.



Image Notes

1. The base is a piece of Styrofoam.





Image Notes

1. This was a special trophy for an Artistic Freedom Fighter. The snake is the chain of censorship. The spear is a paint brush. Non-metallic gold pigment was used for the color.

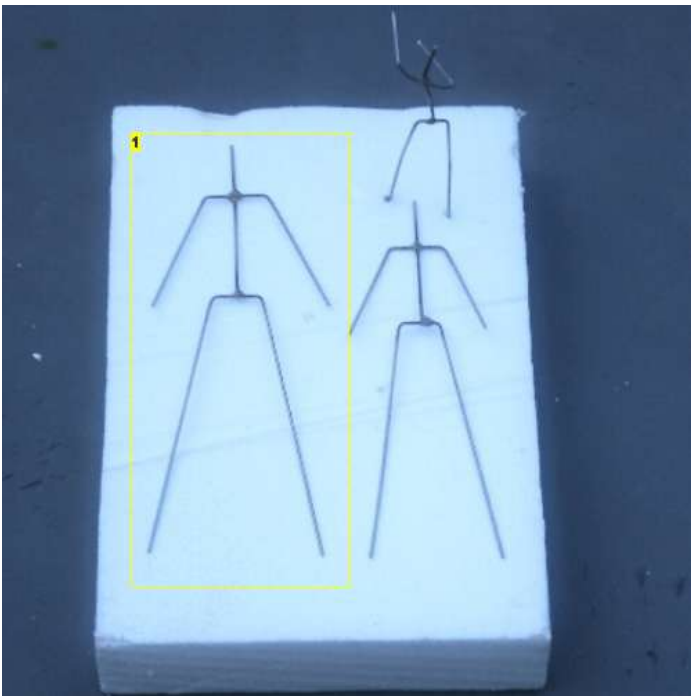


Image Notes

1. Silver soldered stainless steel welding rod is used for the armature.

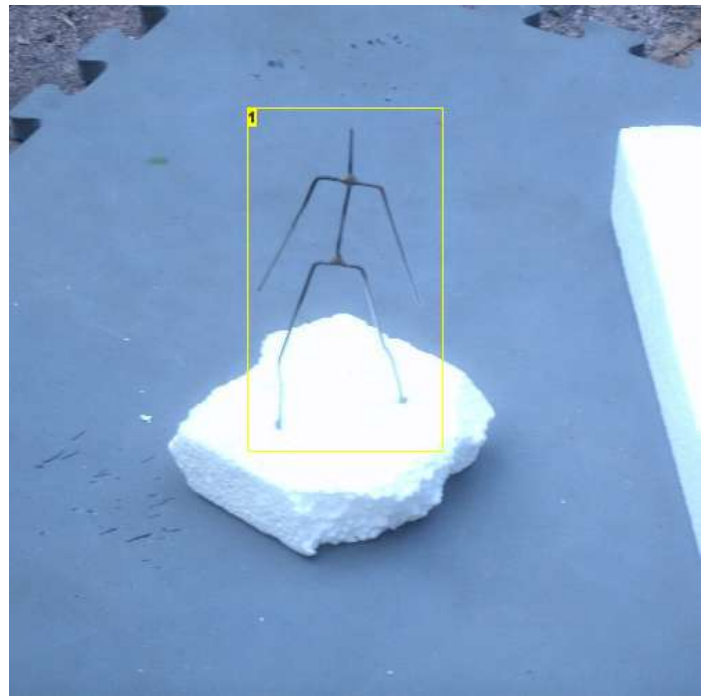


Image Notes

1. Bend the armature and set the long leg wires in the base.

step 7: Styrofoam and Silicone

This abstract sculpture, "Mini-Monument", was about 3 ft. tall. I say "was" because it was not a strong material combination and it broke when someone bumped into it with a car. The sculpture was made of pieces of Styrofoam stuck together with silicone. A skin of bronze-colored silicone was then plastered over the Styrofoam.

When it bends, Styrofoam breaks easily, but if you laminate a non-stretching skin onto it, such as cloth, you prevent a crack from starting. If it can't start, it can't continue, and the piece won't break. Silicone rubber stretches, so it doesn't prevent the crack from starting. This is not a good technique, if strength is important.

Still I liked the sculpture, and could imagine it on a giant scale, that one could walk around in.



step 8: Silicone and Cloth

These hanging fish are carved out of Styrofoam and laminated with cloth using clear acrylic medium (artist paint medium). The fins are made out of silicone rubber and cloth.

On a non-stick polyethylene surface I spread out the cloth and covered it with clear silicone, using a palette knife. After it hardened, I peeled it off, turned it over and did the other side. The silicone penetrates the cloth weave, so the cloth is mechanically locked in. After making sheets of the material, I cut out the fins with scissors and added the ribs with a syringe.

I used a similar technique, using fiberglass matting and silicone, to make a rubberized shower curtain. <http://www.instructables.com/id/SHOWER-CURTAIN-Silicone-and-Glass-Fiber-Mat>

Where the fins penetrate the cloth skin, cut the skin with a knife first. Using a soldering iron with a flattened blade, I melted slots in the Styrofoam bodies in which to set the fins with more silicone.

These fish are light-weight, really tough and hard to break because of the cloth skin.



step 9: Hollow Silicone Sculptures

There are different ways to make hollow shapes out of silicone. These sculptures were first made out of water-base clay over PVC pipe armatures. The armature is still inside them. A layer of silicone rubber covered the clay. When the silicone hardened, it was cut with a knife and the clay inside was removed. The slits in the silicone were then patched with more silicone and the surface was colorized. Normal paints won't stick to silicone rubber, so you have to make your own "paints" out of clear silicone and powdered pigments.

You can make hollow shapes, like squeeze bulbs, over balloons. An alternative technique is to use Styrofoam as the core and then introduce a little solvent, like lacquer thinner into it to dissolve the Styrofoam, leaving the core hollow. Silicone rubber is impervious to even strong solvents like lacquer thinner, or acetone.

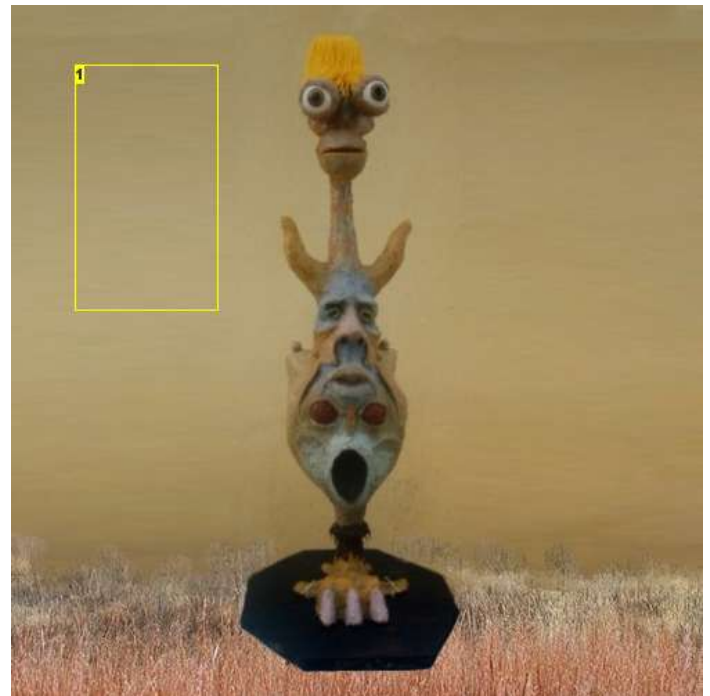


Image Notes

1. A Puppet. The back side has an opening for one's hand, and controls that operate the mouth and eyes. Silicone is flexible, so one can get movement without joints. It was made over clay, with the clay later removed. The colors are pigmented clear silicone, used as paint. The eyes are ping-pong balls.



Image Notes

1. Unfinished abstract horse sculpture. I rubbed silicone into string to make the mane and tail.



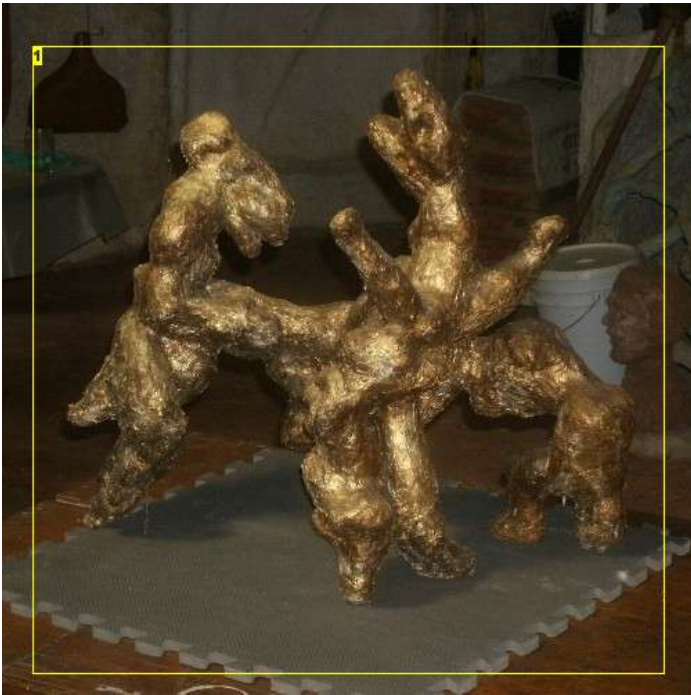


Image Notes

1. "A Death in the Family" -- abstract grieving figures. The forms are a lot like driftwood.



step 10: Mattress Foam and Silicone

These big hanging fish sculptures are soft sculptures. If they fall, they won't get hurt, or hurt anybody. There is some flattened PVC material as an armature, which allows some side-to-side flexing like a real fish body, but not up-and-down flexing. Mattress foam was glued to both sides of that with silicone. It takes very sharp scissors to cut the foam, so I sharpened a pair up like two knife blades. It is fairly easy to sculpt inside the mouth, because the mouth flexes and can be opened up.

A skin of bronze-colored silicone was applied to the surface of the foam with a palette knife. The scales were added with clear silicone directly from the grease gun cartridge.

I like the idea of hanging fish. It is as though they were swimming in water.



step 11: Using Molds

I never found a way to get a smooth surface on sculptures directly, so I used plaster molds to imitate smooth cast bronze surfaces. The original sculptures were made of clay.

The silicone needs to lose acetic acid to harden up, and it can't do that in a closed mold. Also, large masses of silicone take forever to harden up completely because the acetic acid has to find its way out from the core.

I made these sculptures using open molds. The plaster molds were first dried, coated with shellac, and then with a coating of a mold release agent such as wax. When that was dry, I "painted" the inside of the mold with bronze colored silicone and then filled the rest of the cavity with a "bird nest" of clear extrusions directly from the grease gun cartridge. Since the tangle of extrusions had air passages running through it, the core could ventilate and the whole thing could harden up in a reasonable amount of time.

The "Frustrated Artist" pulling his hair was made in an open mold. I coated the back side with a layer of silicone later to seal the air cavities.

The "Belly Dancer" was a much more complicated piece. All together, it is 40 inches tall. The base cylinder is hollow, a piece of PVC sewer pipe, and the three figures on it were each made separately in open face molds and then adhered to the pipe.

The top figure, a sculpture in the round, was made in two halves that were then carefully joined. She has a section of flexible vinyl tubing going up the center of her, and a piece of 1/4 inch rebar inside the vinyl sleeve to give rigidity, since she herself is quite flexible. The idea is to someday put a slow motor in the base connected to the rebar shaft. With a bend in the shaft, she should do a nice hip motion belly dance. The idea was inspired by a little rubber hoochy-coochy dancer toy I once saw that danced when you turned the crank. Maybe I'll get around to finishing it someday.

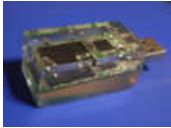




Related Instructables



Hypotooter -- a mini-musical instrument by Thinkenstein



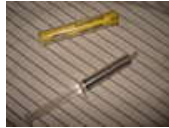
USB casting in transparent resin by protoman



Making Hydraulics !!! by pizzadox747



Diving Depth Gauge by Aleks



How to keep rosin core by hjoetigre



How to Mod a Bolt Yo-Yo by Doctor Popular

Advertisements