SUGRU Slide Whistle

by **Thinkenstein** on September 18, 2010

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Intro: SUGRU Slide Whistle

This instructable is more about what Sugru, a clay-like silicone rubber product, doesn't stick to than what it does stick to. The mouthpiece has an inside air channel that conducts the air you blow so that it hits the leading edge of a wedge. The sound vibration is generated there. It's the same as a recorder mouthpiece.

Unlike a recorder, which has fingering holes, a slide whistle has a sliding plug inside the body of the whistle. By sliding the plug back and forth, the air chamber inside the body is modified. Deeper notes are achieved by sliding the plug toward the far end of the instrument, creating a larger internal air chamber. Higher notes are made by sliding it up near the mouthpiece.

At the end of the instructable is a sample tune improvised with the slide whistle.

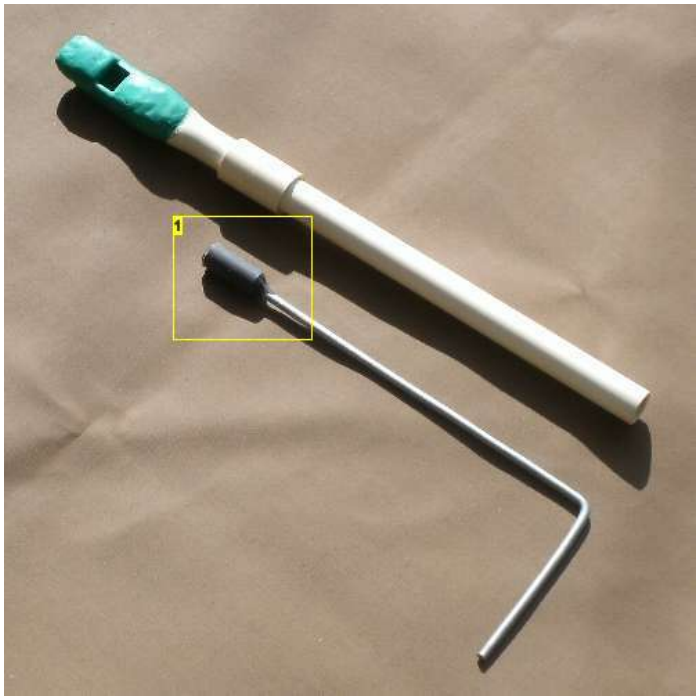


Image Notes
1. Sugru comes in a variety of colors. I used green and gray for this project.

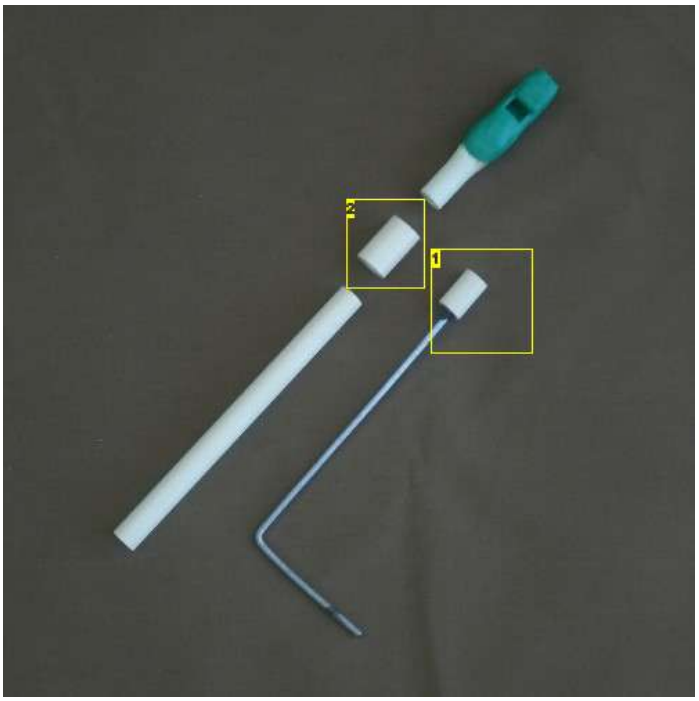


Image Notes
1. Here the sliding Sugru plug is still inside the CPVC pipe section it was formed in.

2. A standard connector joins the mouthpiece with the whistle body.

step 1: Making the Mouthpiece

I had some 1/32 inch thick polyethylene plastic material, which I got years ago at a plastics supply store. I cut it into strips 1/2 inch wide on a paper cutter. Polyethylene is the same plastic used for plastic trash bags. Not much sticks to polyethylene plastic and, sure enough, Sugru doesn't either.

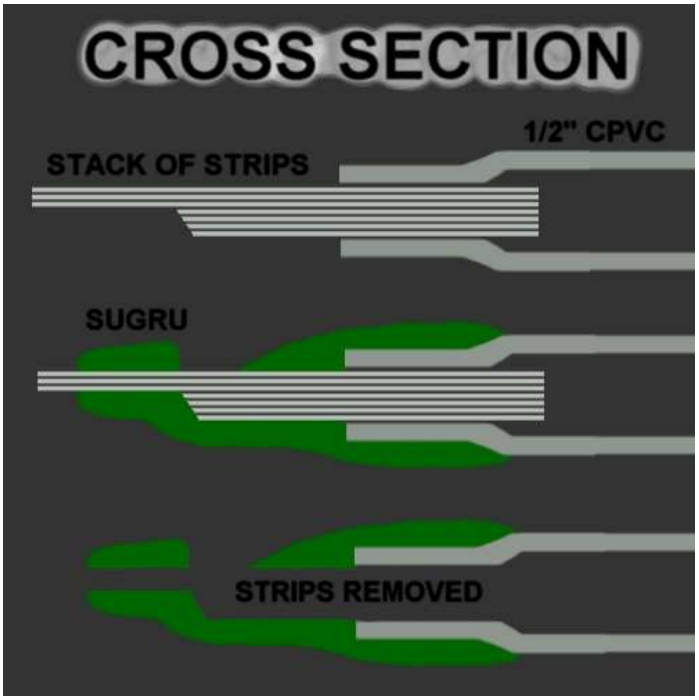
If you can't find this material, you can probably use something else of about credit card thickness and make it non-stick by first coating it with some dish washing detergent and letting it dry. Detergent is the same mold release agent that I used in making the Sugru sliding plug for the whistle inside a section of pipe. More on that later.

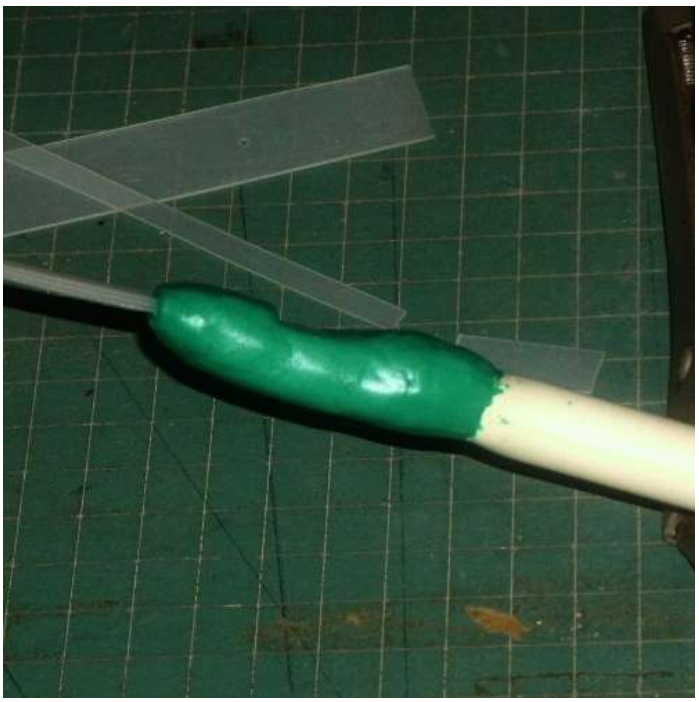
I stacked the strips in such a way that they represented the air space inside the mouthpiece, and strapped them all together with a little cellophane tape.

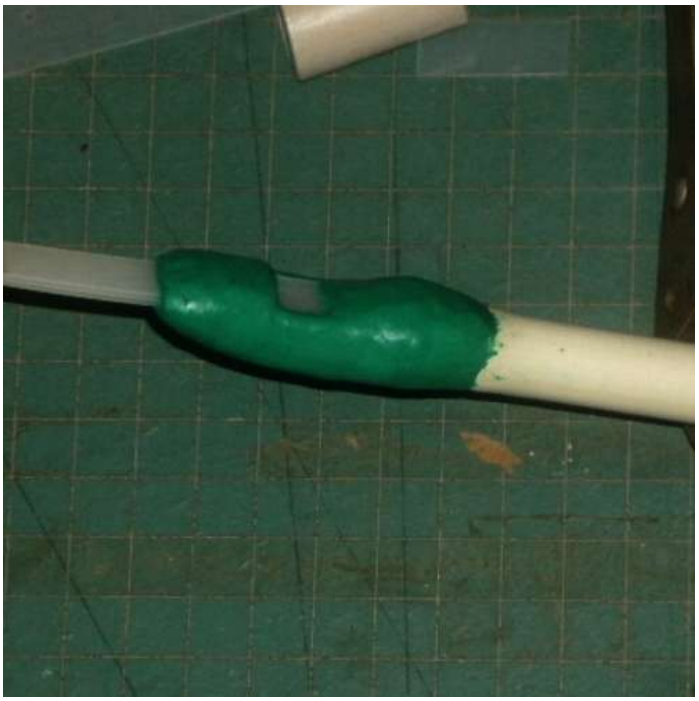
After heating the end of a piece of 1/2 inch CPVC pipe to soften it (like PVC, only for hot water use), I inserted the stack of strips and squashed the heated CPVC down over them to hold them. I heated the CPVC with a propane torch. Be careful not to burn it, as the frumes are toxic. I used a longer piece of CPVC, which made it easier to work with, and then cut the pipe to length

After about 24 hours, the Sugru hardens up and the plastic strips can be pulled out from whichever end is most convenient. Start with strips at the center of the stack, since they have less contact with the Sugru and tape. I used narrow pliers to pull them out with.

To make the perfect whistle, I would have preferred to make many mouthpieces, each a little different, modifying the internal air channel shape (width of the plastic strips used to form it), and the angle of the wedge that creates the sound. It takes a good deal of air to blow this instrument. Smaller air channels would use less air, but would would probably create less sound volume, also. The finished instrument could be better, I'm sure, but at least it works.







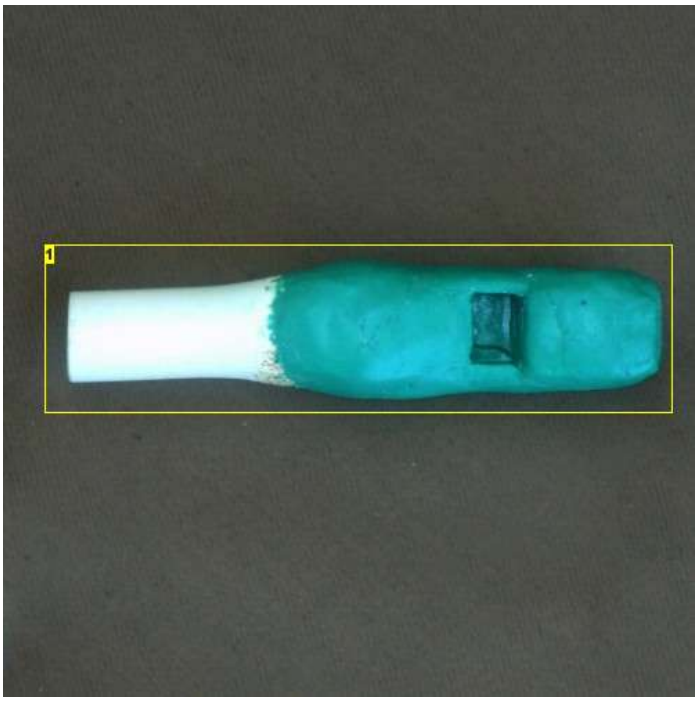
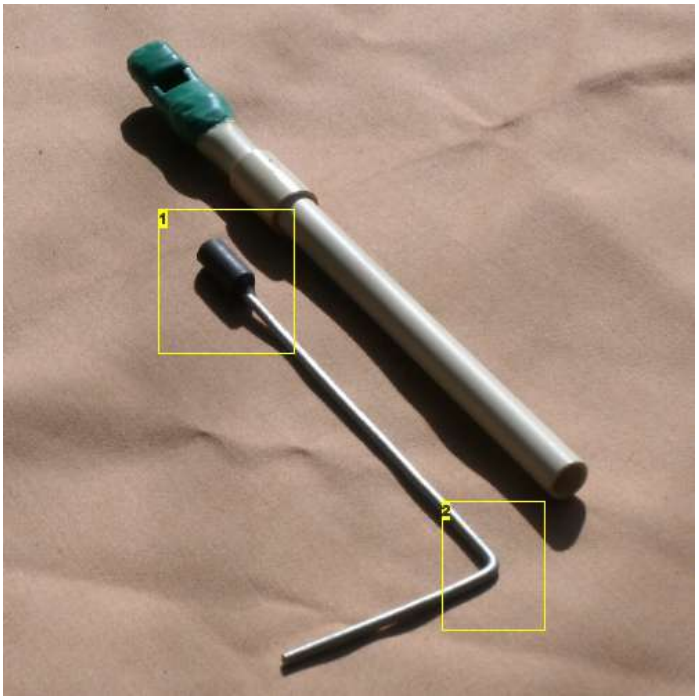


Image Notes
1. The plastic strips have been removed, leaving the air channel.

step 2: The Sliding Plug

By forming the plug inside a piece of the same diameter pipe as the whistle body, you are assured of a tight fit in the whistle. It turned out to be too tight, so I sanded down the Sugru with some #220 sandpaper; turning it frequently to avoid sanding any flat spots in the cylinder. I ended up using a little Vaseline as a lubricant, also.

I'm sure there are probably simpler ways to make a slide whistle, but this was a test of the Sugru material, more than anything. I have never seen a rubbery mouthpiece.



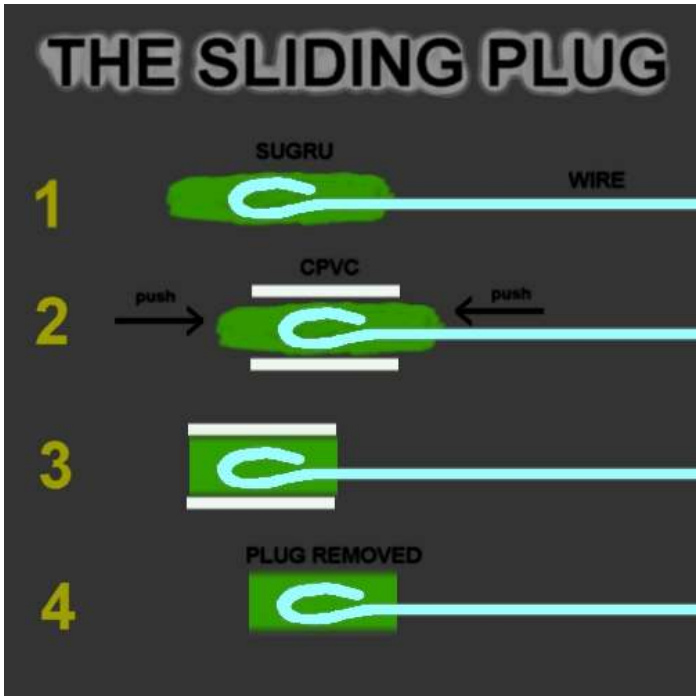


Image Notes
1. This is the sliding Sugru plug.
2. The wire handle was bent here. The bend is located to make contact with the whistle body as a stop when the plug is reaching the connecting piece. That avoids any problems with internal irregularities at the connecting piece.

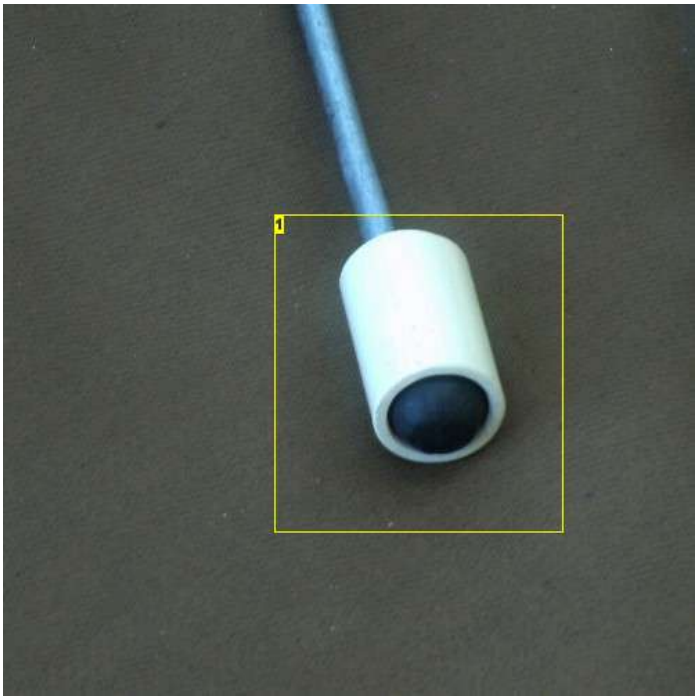


Image Notes
1. The CPVC mold sleeve is the same diameter as the whistle body pipe, so the plug has a tight fit inside the whistle.

step 3: My thoughts about Sugru

I love silicone rubber and have made lots of things with it over the years -- shower curtains, sculptures, painting tools, non-stick work surfaces, etc. I was very interested in trying out the Sugru.

The Sugru doesn't have the acetic acid smell that RTV silicone does. I don't know the retail cost of Sugru, since the sample packet was free, but I imagine it is probably more expensive than silicone in cartridges from the hardware store.

I like the easy workability of Sugru, which is like clay. The ease with which the surface can be smoothed by stroking it with a finger or tool is nice. RTV silicone doesn't get that smooth a surface by building it up directly. Usually it needs to be applied to a smooth non-stick surface to get that degree of smoothness.

Sugru, when it hardens can be easily sliced with a sharp knife. Sanding is possible, but that roughs up the smooth surface some.

I did some other experiments with it before making the whistle. By spreading it on some non-stick polyethylene material, I was able to make a rubbery "reed" for use in a reed musical instrument. The sound was different from the other reeds I make -- a deeper sound. It was not as responsive over as wide a range of notes, though.

I also built some beads with it on nylon fishline. It doesn't stick well to the nylon, either, so that left a nice hole for stringing. As beads, though, it just doesn't turn me on, having a fairly cheap appearance.

Anyway, it is a user-friendly material, and a good material to have in one's bag of tricks.

step 4: Music Sample using the Slide Whistle

Click on the MP3 file and you should be able to hear a short improvisation with the slide whistle.

File Downloads

THE SUGRU SLIDE WHISTLE.mp3 (674 KB)
[NOTE: When saving, if you see .tmp as the file ext, rename it to 'THE SUGRU SLIDE WHISTLE.mp3']

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