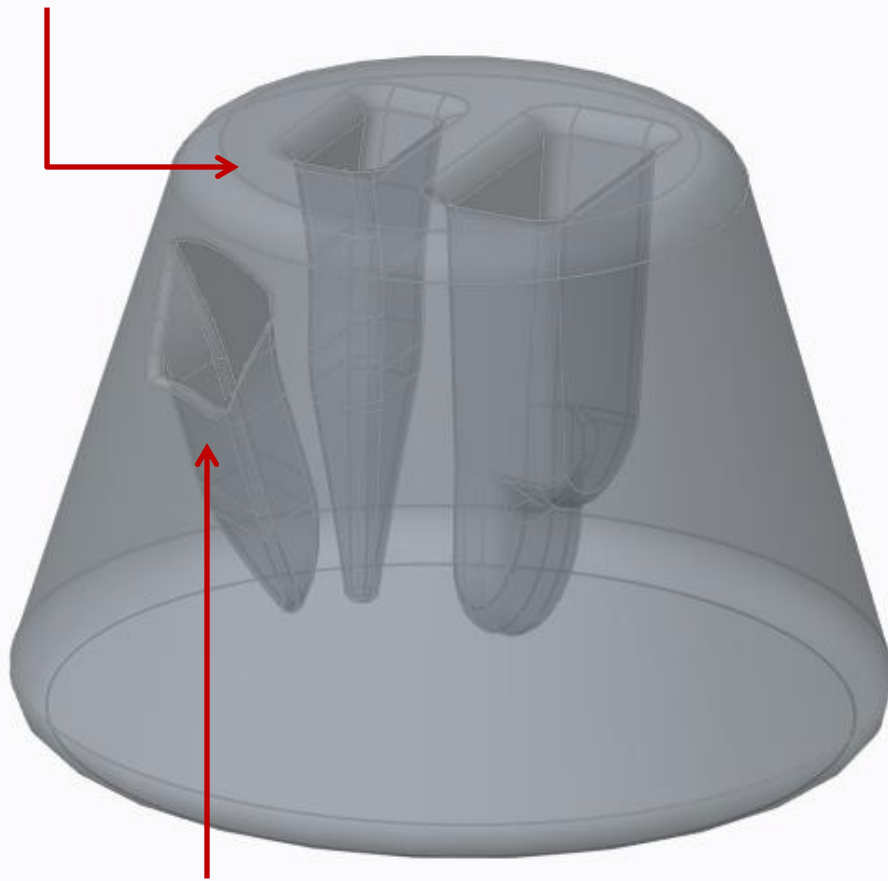


The image shows two custom-made tool holders on a perforated metal plate. The holder on the left is blue and contains two green-handled tools. The holder on the right is white and also contains two green-handled tools. The tools have curved handles and dark tips. The metal plate has a regular grid of small circular holes.

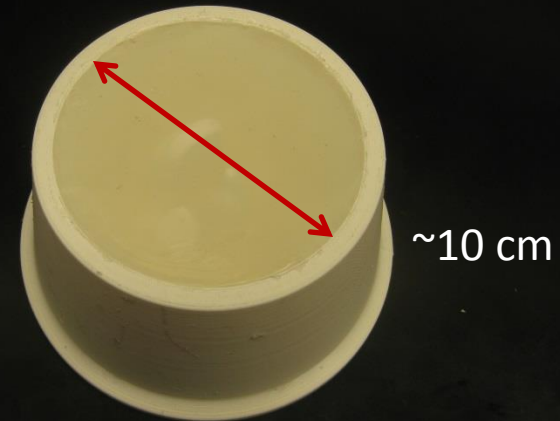
Container for some of my tools

Tony Hyun Kim
ME 205: Quick Start
2013 11 7

Goal 1: Verify the fit of tool recesses



Goal 2: Find out feasibility of angling recess



Version 1

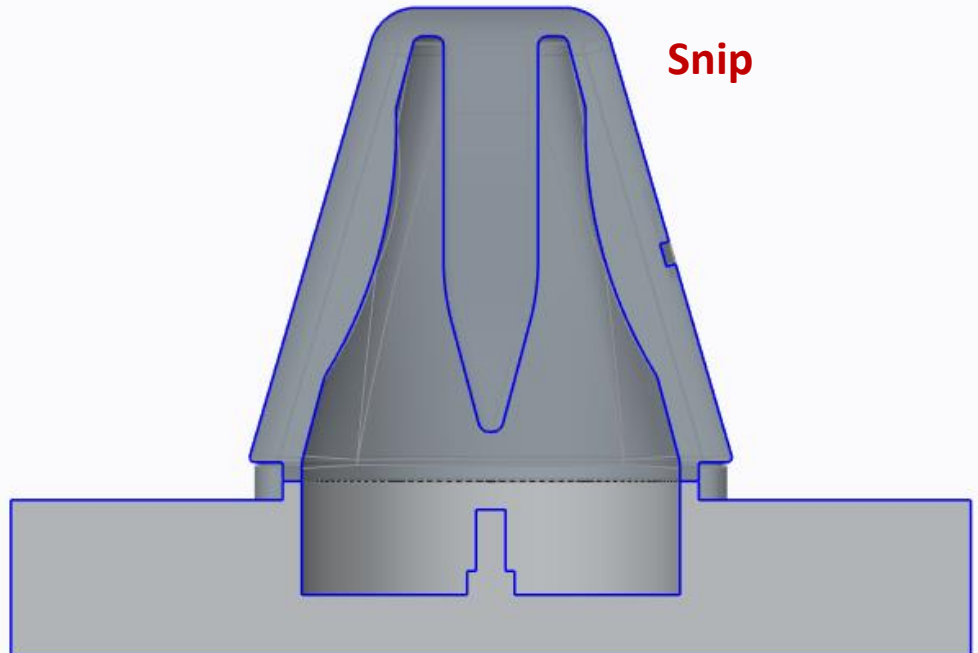
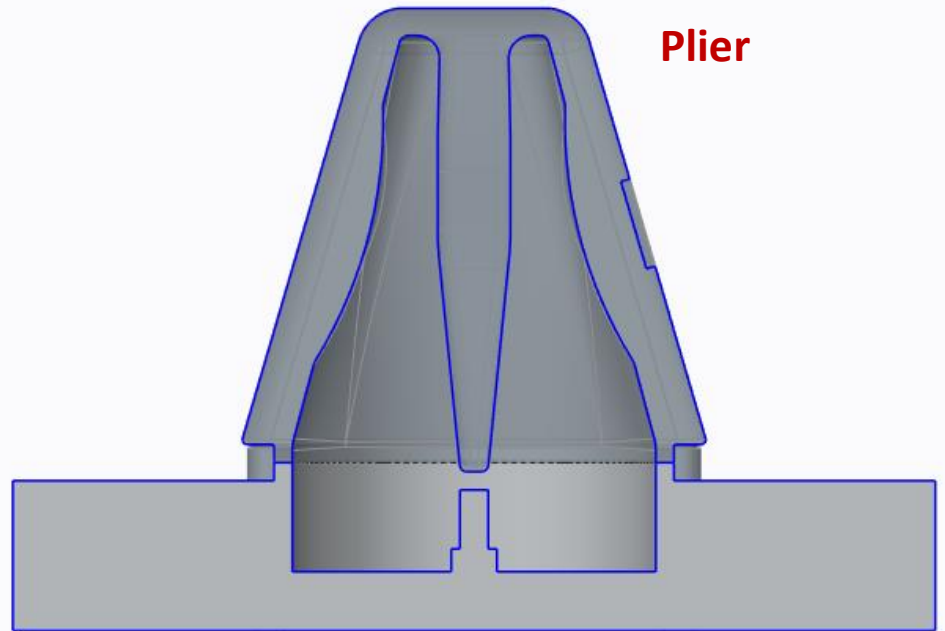
[Left] Initial CAD of the sketches. With this first part, I wanted to: (1) verify the fit of the tool recesses, and (2) determine whether it is possible to angle the tool recess and still be able to remove the part from the mold.

[Right] Pictures of the poured mold. Because of the relatively large volume of the part, I had to mix silicone (SC40) in three batches, which prevented me from using coloring.

Version 2

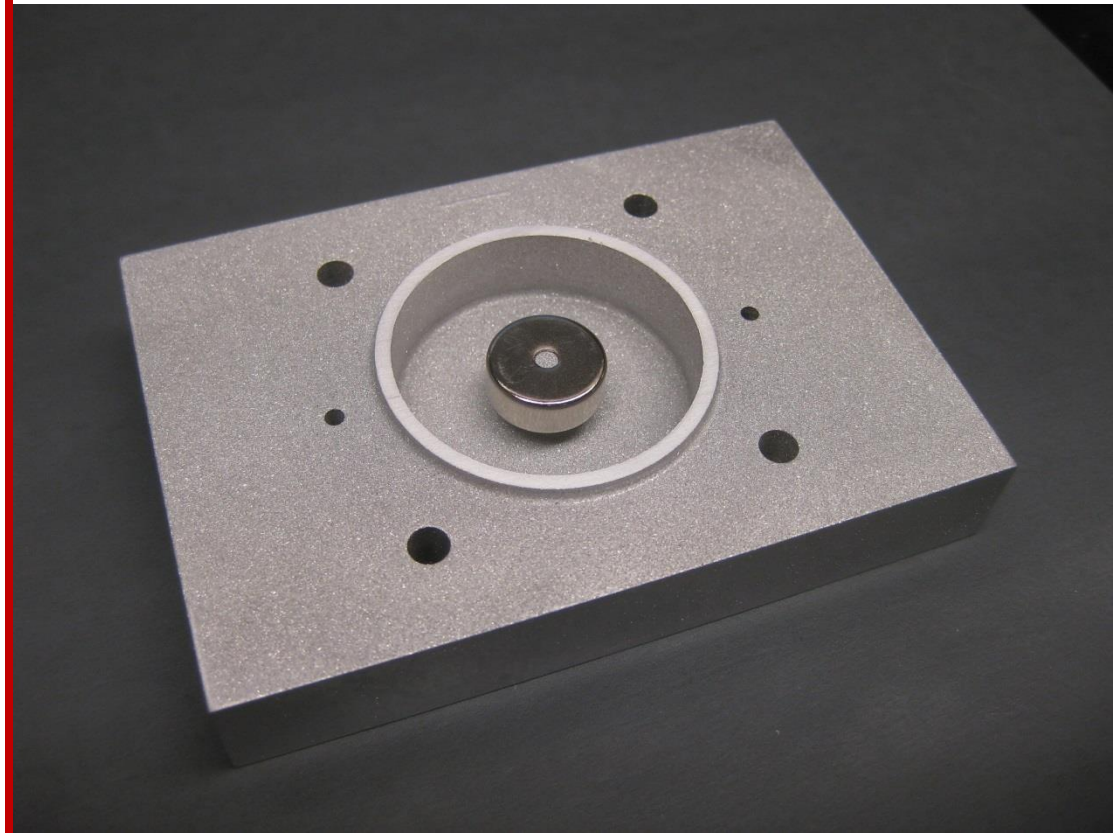
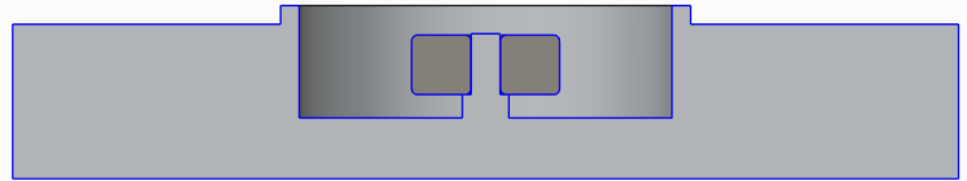
From **Version 1**, I found that the large part (a holder for all three tools) was somewhat unwieldy. The mold was necessarily larger than the part, which made 3D printing costs quite high. I also had to mix silicone in batches, which prevented me from using coloring (to maintain a homogeneous color for the part).

[Right] Two smaller molds for the plier and the snip. The part recess shapes were slightly modified from V1.



Version 2

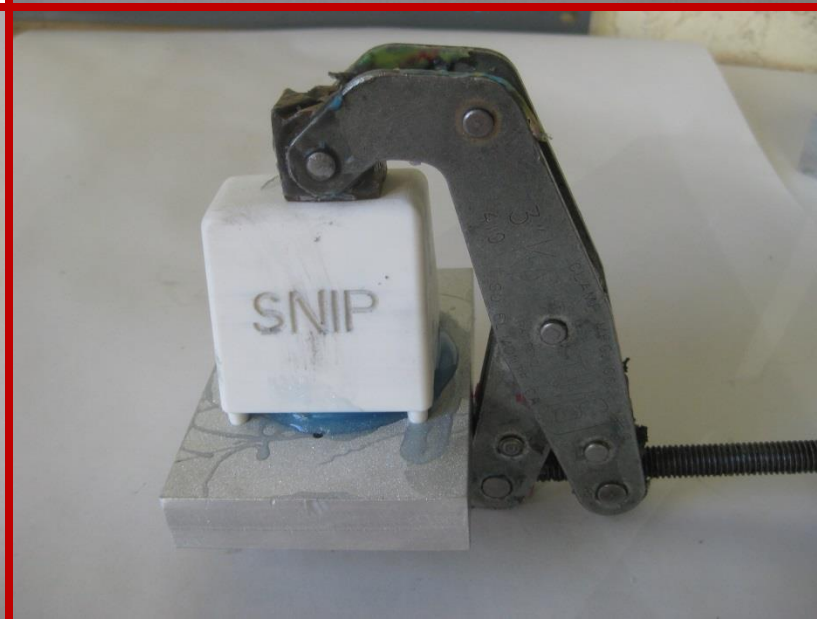
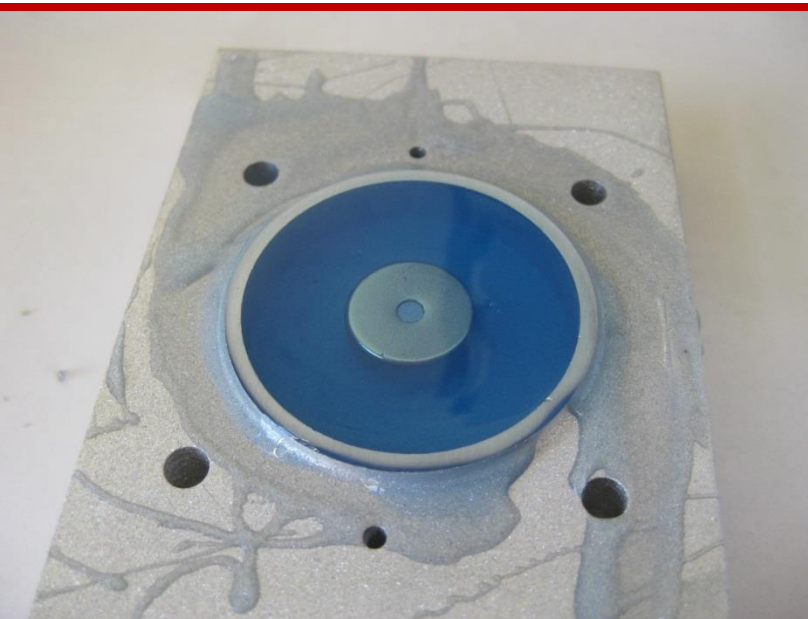
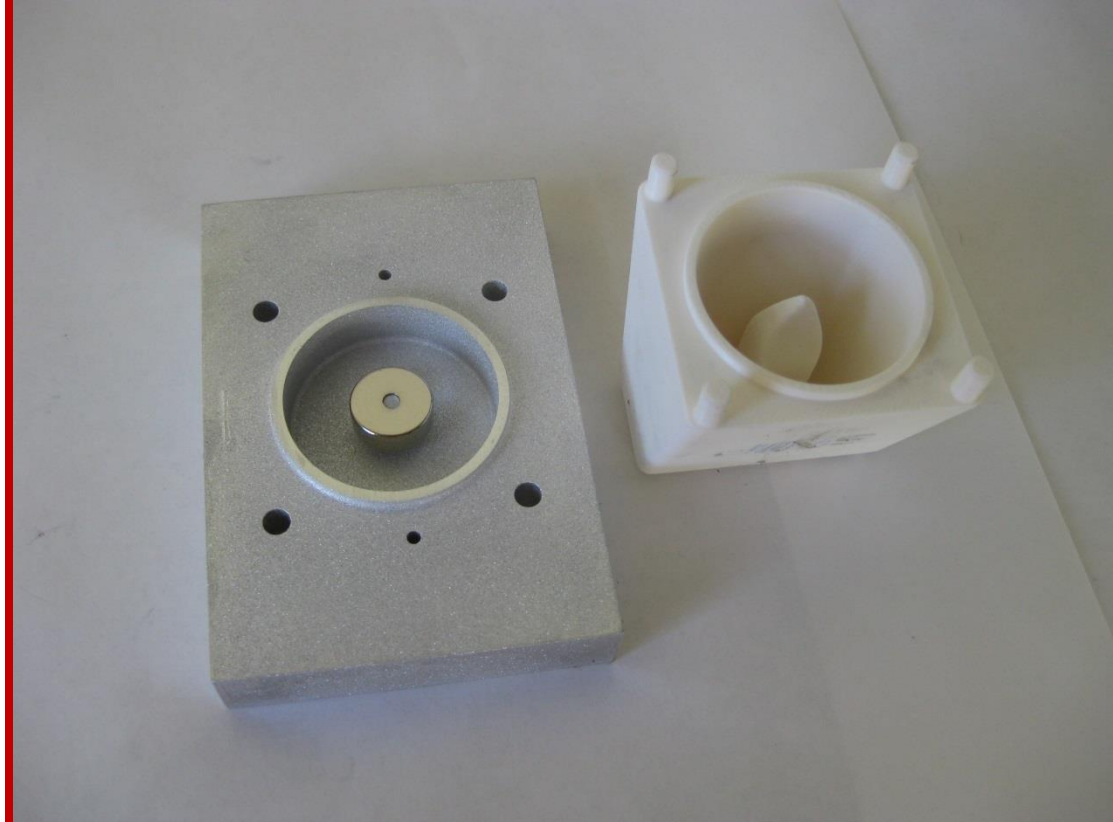
[Right] The idea of the protrusion from the bottom mold was to hold a magnet in place at the bottom of the silicone part. As I made each part smaller, it was necessary to incorporate the magnet so that the holder would not wobble on the table.



Version 2

[Some photos from the molding run] By making the part smaller, the entire process was much more manageable and also much cheaper!

(A small note about FDM-printed parts: sadly, sandblasting doesn't work so well!)

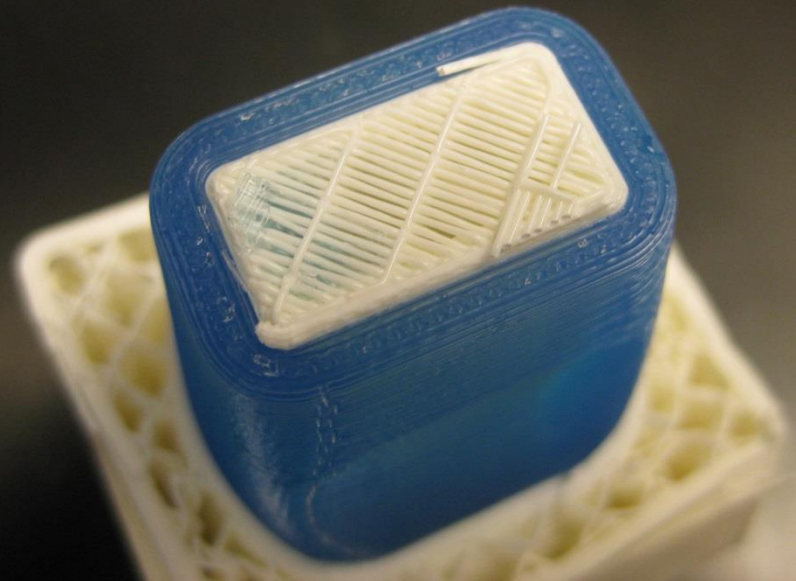
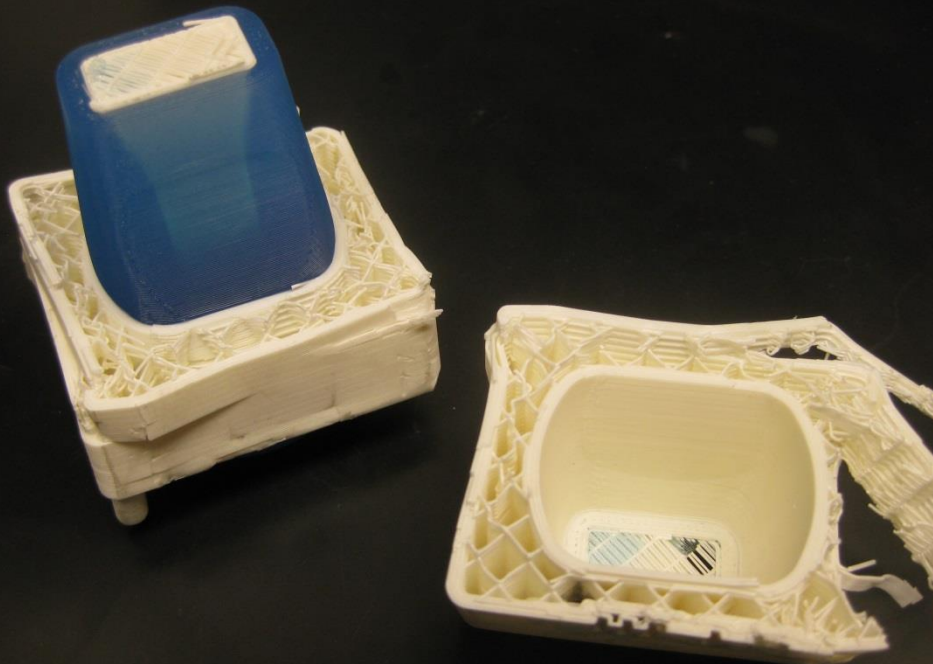
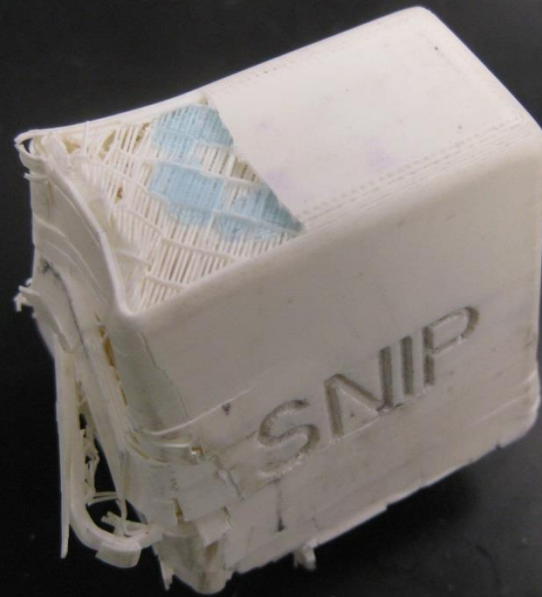


Version 2

[De-molding the part] Despite using mold release, it was quite difficult to remove the (SC40) part from the mold. Eventually, I decided to destroy the mold (by crushing it in a vise) to remove the part.

As I was destroying the 3D printed mold, I found that: (1) the mold part, despite having hollow interior, was quite strong; and (2) that silicone had “leaked” into the hollow interior of the 3D printed part!

(When I re-made the part with DragonSkin 30, rather than SortaClear 40, I was able to nondestructively remove the part.)



Version 2

[Concluding thoughts]

- **Smaller parts** turned out to work very well. Keeps the mold / silicone costs low.
- I'm also happy with the **embedded magnet**. The silicone part nicely damps the "collision" between the holder and the table. In addition, the magnet also gently "pulls" in the tool into the recess.
- **Surface finish:** I also like the surface finish coming from the sandblasted aluminum (bottom mold). On the other hand, the FDM mold part (top mold) wasn't "sandblast-able." In the future, I'd like to work with metal molds.

