



3D Printing for Chocolate Molds

Created by Ruiz Brothers



<https://learn.adafruit.com/3d-printed-chocolate-castings>

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Overview

3D printing food is here and its delicious! Although we cant 3D print chocolate on our Makerbot quite yet, you can design and print your own chocolate molds just in time for Valentine's Day.

Things & Supplies

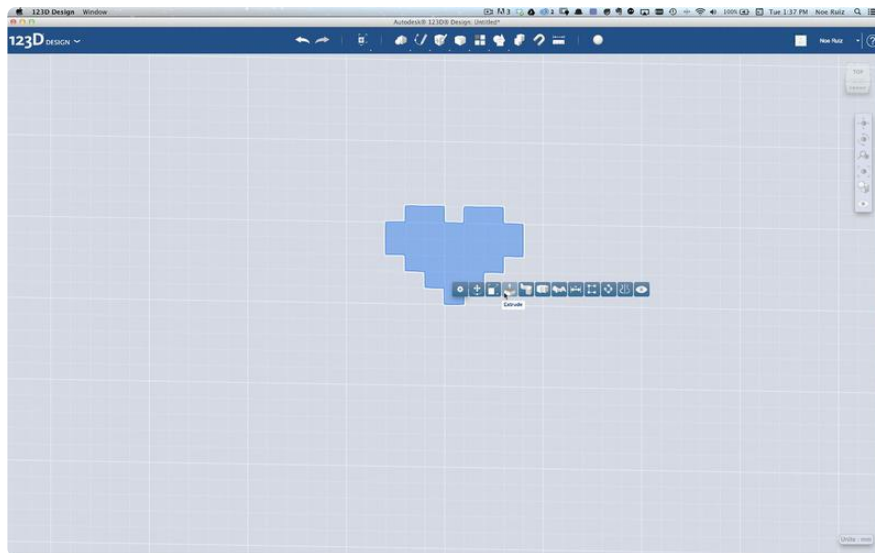
- Food-Safe Silicone Putty
- Lollipop Sticks (optional)
- PLA material
- Chocolate Melts
- 3D Printer
- Microwave
- Weight Scale



Customize & Design

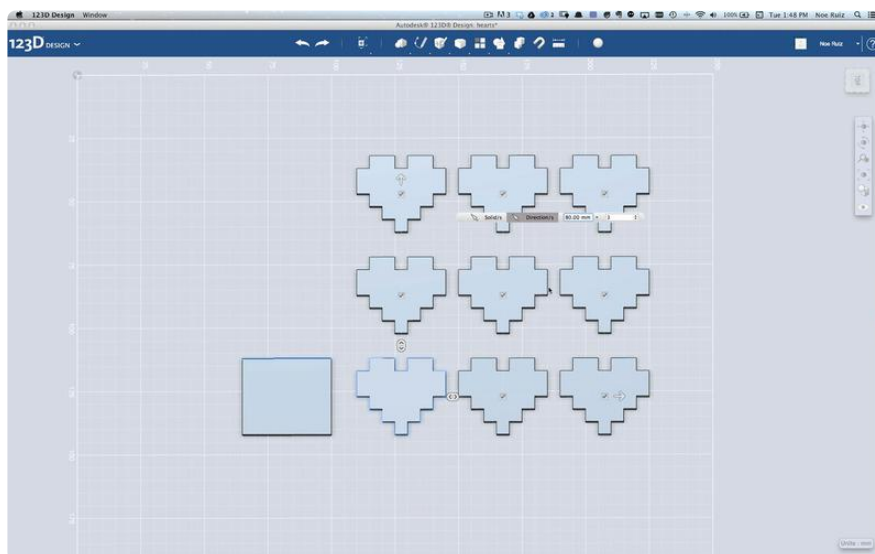
Importing Artwork

You can import SVG vector artwork into 123D Design web app for really customized molds. Use the import option in the menu to add your artwork. You will need to extrude your artwork to at least 2mm of height. Your casting can be as big as you'd like, so as long it fits within the boundaries of your 3d printers build plate. Just keep in mind, the bigger your casting, the more silicone material you will need.



Designing

We made our 8bit heart shape using the Polyline tool in 123D Design. Simply draw out a shape by clicking points to create lines and close the shape. With the shape selected, you can choose the extrude option in the floating menu under the gear icon. Try using a minimum height of 4mm so that your chocolate treats are thick enough to remove from the mold.



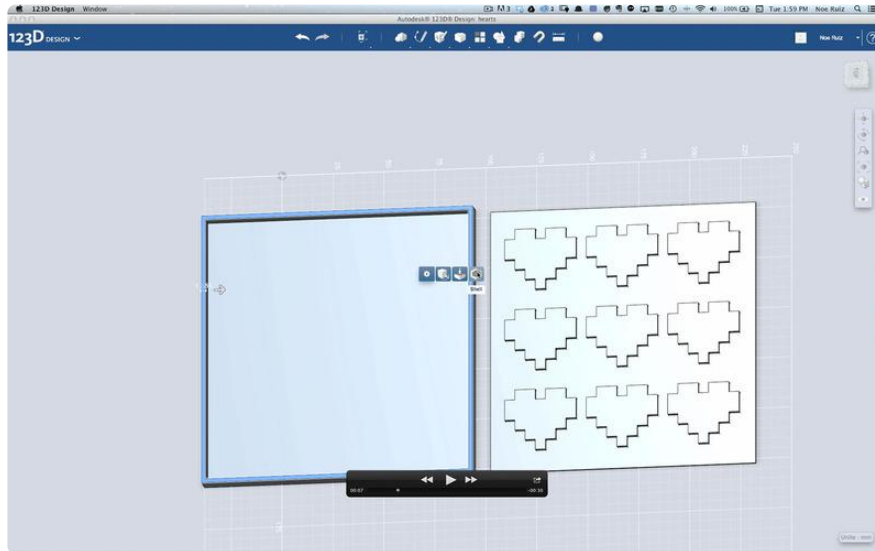
Pattern Repeat

Use the repeat pattern function in 123D to create an array of shapes for your casting. Remember the more shapes you create, the more material you will need to cover the casting. We were originally going to make a 3x3 tray but ended up with a 2x2 for testing material and a quick build. With your shape selected, go to the Pattern option in the top file menu, and select Rectangular Pattern. Now select the direction option in the floating menu and click on a line in your shape to choose the direction. In the

quantity input box, type in the amount of copies you want. Now you can use the arrows to spread out the copies.

Making a Tray

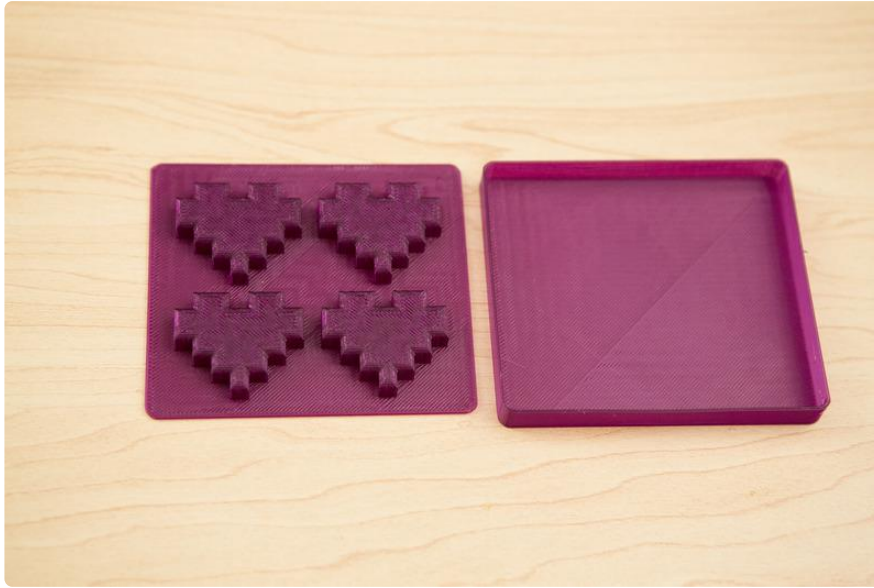
With your shapes laid out, you will need to connect them together with a slab of plastic. Simply lay a primitive 1mm cube on the surface with a length and width that encompasses your shapes/artwork. Combine the shapes to the plane to make it into a tray.



Enclosure

You'll want to create a simple box enclosure to use for molding the bottom shape of the mold. Create a simple enclosure by placing down a primitive cube and applying a 1mm shell function to the box. Just make sure the tray can fit inside the box. Use the measuring tool for checking distances and dimensions of shapes.

3D Printing



Finishing Techniques

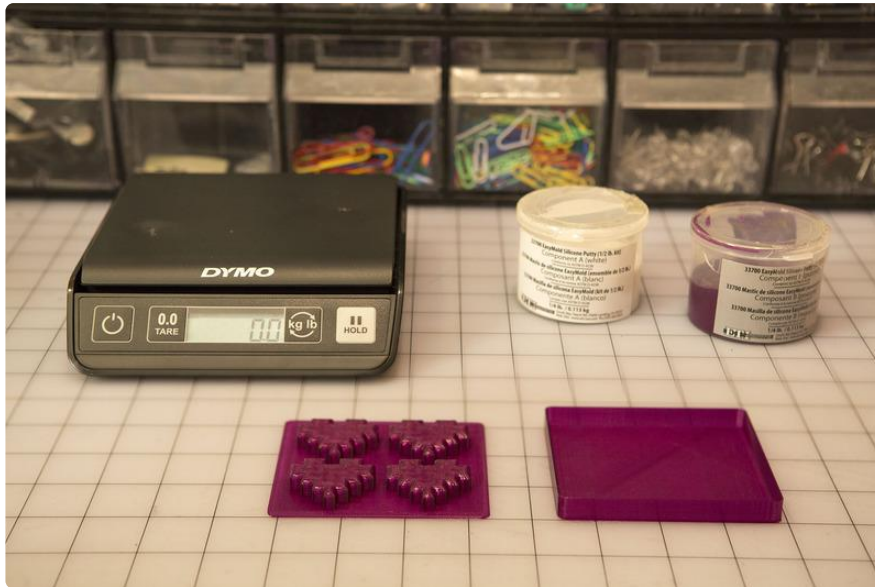
For really smooth casted treats, try sanding down the surface of your 3d print with fine sanding paper. The silicone putty captures every detail it touches and adds that typical texture found in most FDM 3d printed parts. It almost looks as if the chocolate was 3d printed with the ridged textures!

4x4 Heart Cast About 35 minutes 5g	PLA @230 No Raft No Support	2 shells 15% Infill 2.0 Layer Height 90/150mm/s
Heart Enclosure About 35 minutes 5g	PLA @230 No Raft No Support	2 shells 15% Infill 2.0 Layer Height 90/150mm/s

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Casting Mold



Weighing Scale

A weighing scale is great for measuring the an equal amount of compound. This stuff is a 2-part compound so you need to have mix the purple and white material together equally to make the silicone mold.



Easy Mold

This silicone putty is a food-safe material specially made for making custom food molds. You can pick this stuff up at your local crafty department store or amazon. It has a work time of 3 minutes and cures in just 25 minutes.



Needing Compounds

You will need to mix these two materials together in order to make the mold. Needing is the process of bending the two materials together until the mix is an evenly colored material. Try to do this quickly, you only have about 3-5 minutes until the material solidifies and you can't shape it anymore after that.



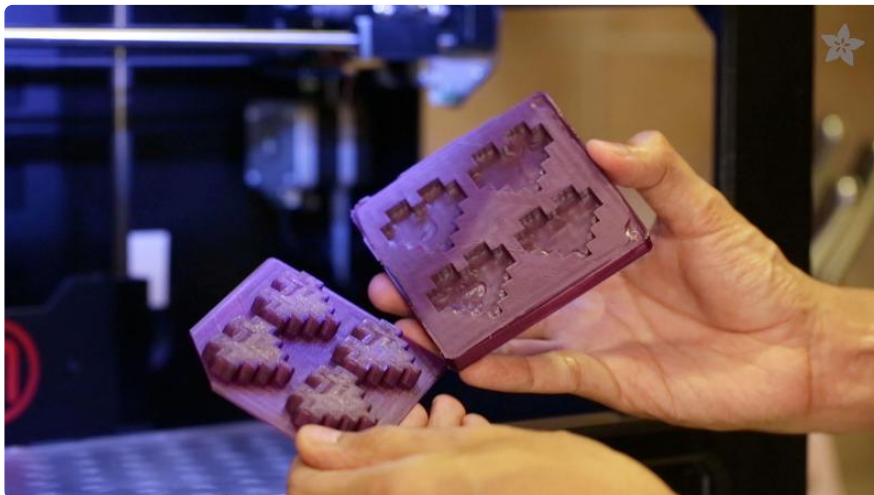
Applying Mold

Spread the mixed silicone putty onto the 3d printed tray casting. Try to event spread the material, getting all the creases and cavities. Once it's spread across the whole tray, use the enclosure box to shape the bottom of the mold. Press down on the enclosure to get out all the air bubbles that may be in the casting.



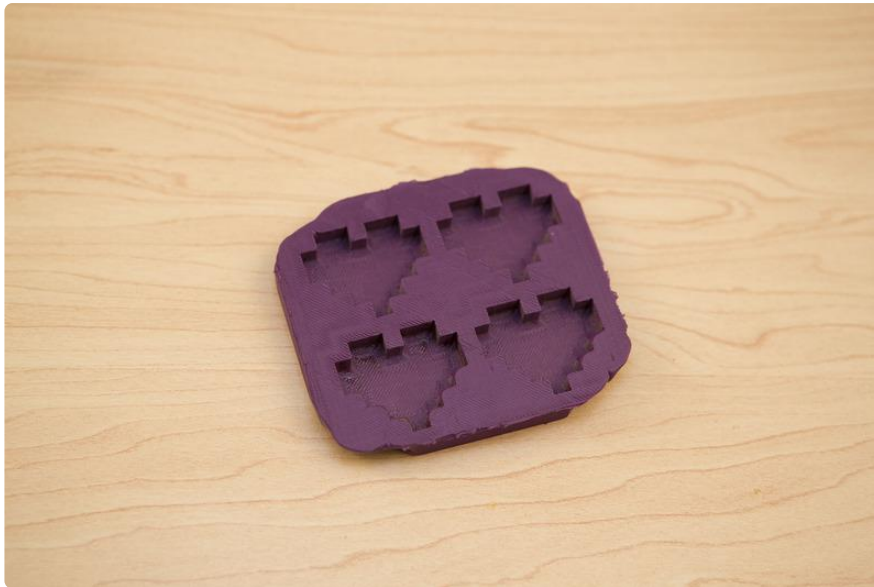
Curate

Let the mold dry for 20-25 minutes. Set a timer or something that will remind you. The mold won't damage or deform if its left longer, just don't forget about it.



Removing Mold from Casting

Carefully remove the mold from the cast by peeling it out. Be care not to break the tray, like we did in the corner there.



Inspect the quality

Take a close look at the mold and see if there are any imperfections. If you have bumpy areas that should be smooth, you may need to apply more pressure, removing any air bubbles that may have caused the bumps. If all is well, it's time to melt some chocolate!

Chocolate



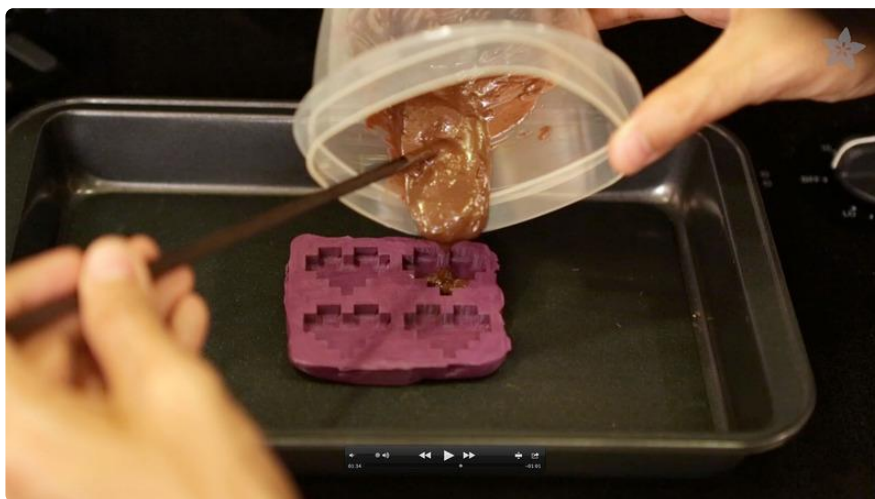
Dessert Materials

Chocolate, jello, candy, what ever type of sweet treat that is a liquid that turns to solid can be casted! Its up to you, we just happened to like chocolate ;-)



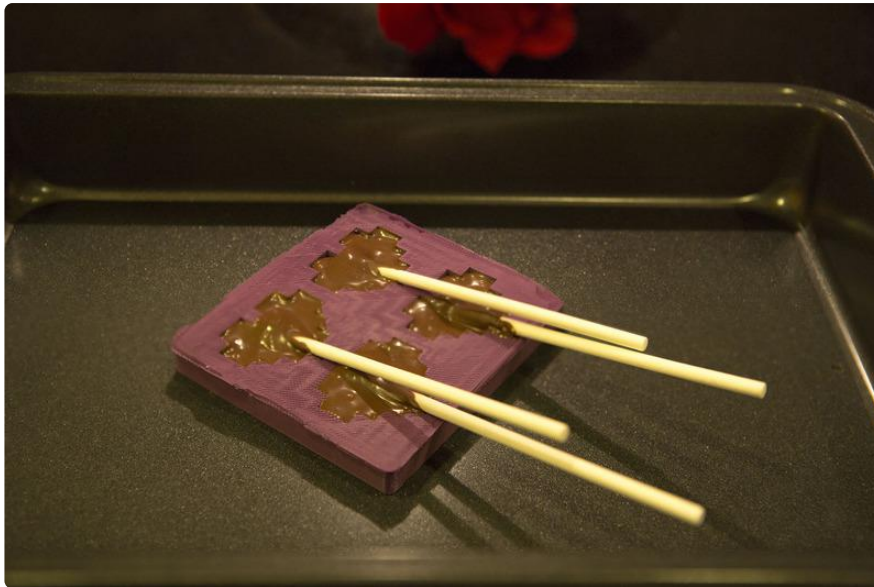
Preparing chocolate

Chocolate Melts are chips that can be microwaved to create liquid chocolate goodness. Depending on your mold, you will need to experiment on how many chips to microwave. We found each 8bit heart takes about 2-3 chips to fill. Microwave for 30 seconds. Check on it and stir with a stick. Sometimes the chocolate looks like its solid but quickly melts after its stirred. Don't over microwave the chocolate, it gets crunchy if you do and makes the molding process subpar.



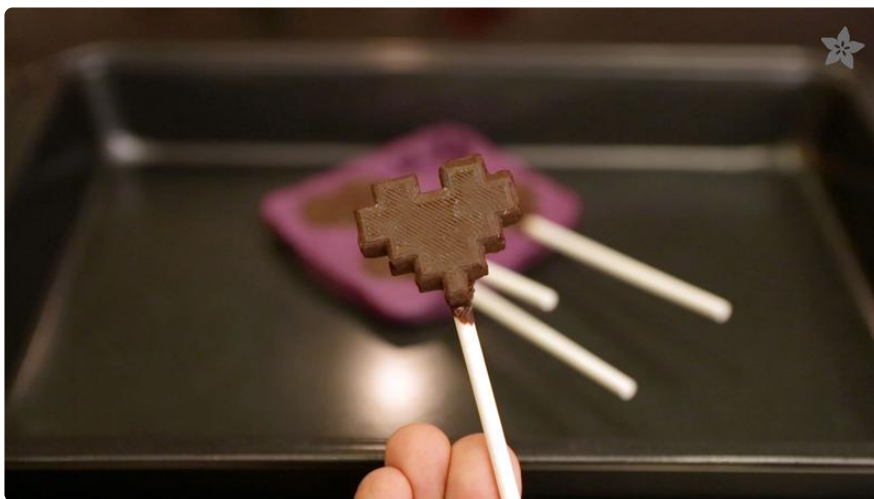
Pouring the chocolate

Try pouring the chocolate higher up so that it makes a thin string, popping any bubbles on the way down. Start in one corner and let the chocolate flow over details. Air Bubbles are bad! so be sure to stir thoroughly.



Lollipop sticks

You can optionally add these sticks to make chocolate pops.



Cooling

You can pop these newly molded treats in the fridge for 4-5 minutes to quickly solidify the chocolate. To remove, simply flex the mold to pop out the chocolately goodness.