Circuit Cookie Roller

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https://learn.adafruit.com/circuit-cookie-roller

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Overview

https://youtu.be/hKZPGnjtBu4 ()

In this project we'll show you how we made these circuit cookies using 3d printed cutters.

These cookies have a textured trace patterns and have sharp edges that make them look amazing!

The level of detail on these cookies are finely crisp and retain their shape by using non-rising dough.

To make the patterns, we 3D printed our rolling pin with an embossed pattern. This was designed to be a sleeve that fits over a wooden rolling pin.

[Filament for 3D Printers in Various Colors and Types]

Having a 3D printer without filament is sort of like having a regular printer without paper or ink. And while a lot of printers come with some filament there's a good chance...

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[Ultimaker 2+ 3D Printer]

The Ultimaker 2+ is one of our favorite 3D printers on the market. It's a well-built open-source compact machine with an excellent UX. Every inch of the...

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3D Printing

The 3D printed parts are fairly easy to make with most common home desktop 3D printers that are on the market.

And if you don't have access a 3D printer, you can order our parts by visiting our Thingiverse page and have someone local 3D print the parts and ship them to you.

Download Rolling Sleeve Fusion360 source

Download Cookie Cutters Fusion 360 source

Download from Thingiverse

Download from Youmagine

Download from Pinshape

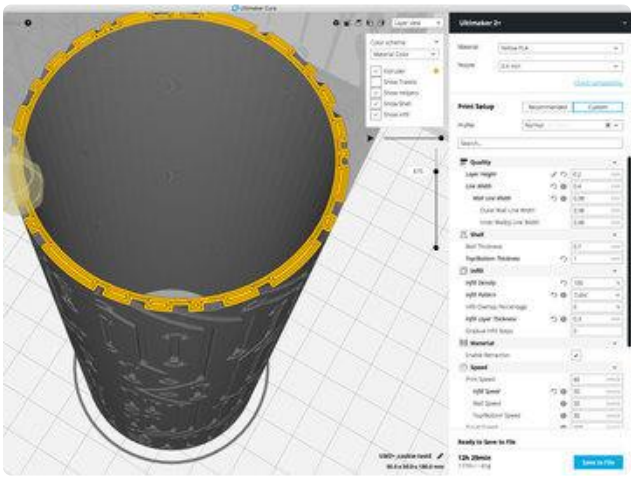
We designed the sleeve using Fusion 360's sheet metal tools. The flange tool can actually be used to make unconventional designs.

We basically made a cylinder that can be flattened out into a sheet. This rolls out a solid body that we can then sketched on top of.

We drew out the traces and made the emboss by extruding the profiles as a cut.

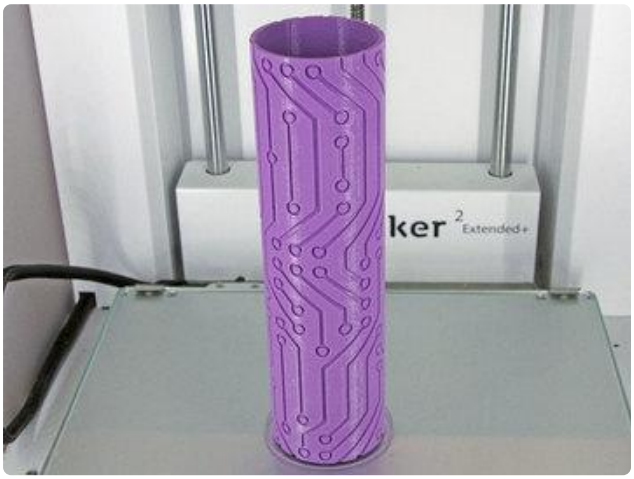
This technique actually allows the pattern to wrap around the cylinder without distorting any of the geometry.

Slice Settings



Download the STL file and import it into your 3D printing slicing software. You'll need to adjust your settings accordingly if you're using material different than PLA.

230C Extruder Temp
No heated bed (65C for heated)
1.0 Extrusion Multiplier
.4mm Nozzle
0.38 Extrusion Width
.2mm Layer Height
100% infill
No Supports
skirt
60mm/s | 120mm travel speed

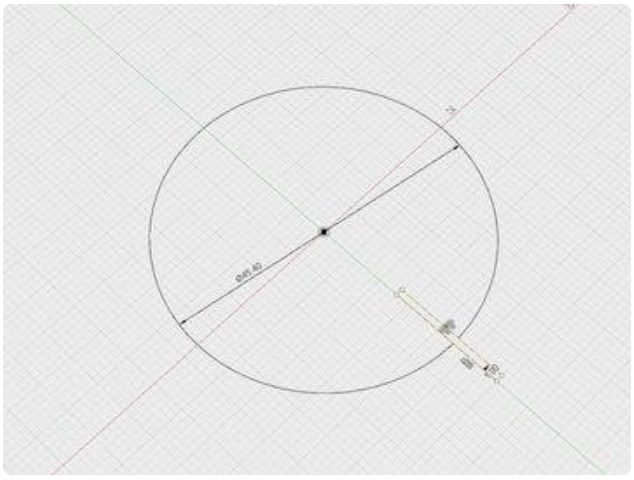


We 3D printed the rolling pin straight up vertically with no support material using PLA material. Since most of pattern are 45 degree angles, the fine details came out great.

The cutters are printed flat on the bed and feature a thin perimeter to make sharp edges that can cut through the dough.

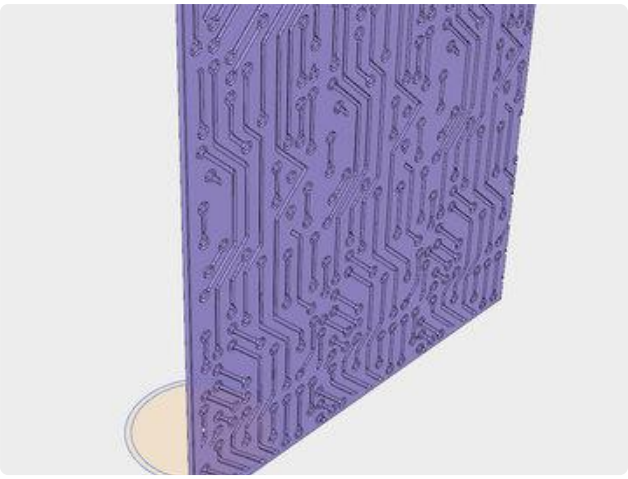
Edit Design

We designed the sleeve using the sheet metal tools in Fusion 360. We extruded an intersected circle with a flange and rolled it out using the unfold modifier.



Measure the radius of the your favorite rolling pin and adjust the sketch. You can edit the thickness of the sleeve depending on the design you choose.

Next measure the length of the rolling pin and then adjust the extrusion distance to properly fit the deign of the pattern.



Then we drew the traces on top of the surface using a sketch and extruded them to make a cut.

This allows the pattern to wrap around the cylinder without distorting any of the geometry.

Assembly

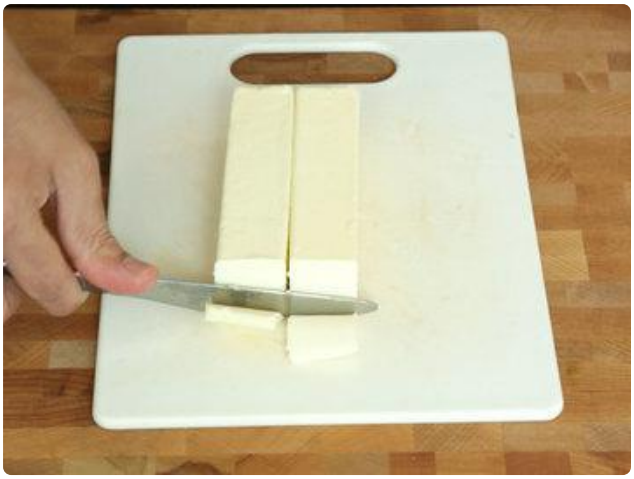
Attach Pattern Roller

You can slide the pattern part onto a rolling pin or just use the pattern roller by itself.

The rolling pin handles make it easier to roll on the imprint but you can still texture the dough without the rolling pin!

Ingredients

2 sticks (1 cup) cold, unsalted butter, cubed
1 cup granulated sugar2 eggs
4 cups all-purpose flour
3/4 cup cornstarch
3/4 teaspoon kosher salt
1 teaspoon vanilla extract



Mix Ingredients

Cut the sticks of butter into cubes to make it easier for the mixer. Add to a bowl and then mix with sugar on a low setting.

Next add the eggs and mix. Don't mix for a long time as this will mix in too much air and allow the dough to rise.

Once mixed we'll add the cornstarch and flour. Mix and then add the vanilla extract.

Continue to mix until the dough pulls away from the sides of the bowl.

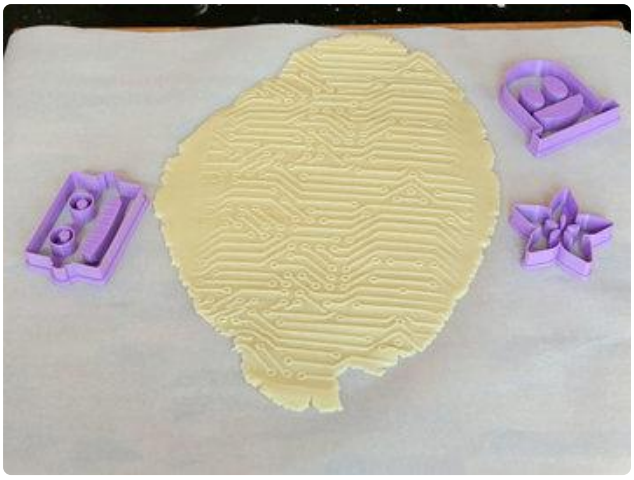
Now we are ready to roll and cut!

Roll dough

This dough is easy to work with and there is no need to chill it so you can go straight to rolling and cutting.

Roll out the dough in between two sheets of parchment paper.

Use the rolling pin to evenly flatten the dough. You could also use a cylinder like a spray bottle or can you spread out the dough.



Roll Pattern

To get the pattern to really show through. We rolled it out slowly while press down on the sheet.

It’s not sticky so it doesn’t get stuck in between the crevices and it holds its shape.

Cut shape

To cut out the shape, we firmly press down on just the edges and slightly wiggle to it break away. It can be a bit like tetris if your laying out patterns to be efficient.

Parchment paper makes it easy to remove the cookies and there's no need to dust your counters with flour. It's less waste and mess free.

Bake

We made a whole batch of them using different shapes and set the pattern going in different directions so it's easy to get variations.

We baked these for about 9 minutes at 375F or 190C. Top rack, conventional oven.

These cookies came out nice and it’s really thanks to the non-raising dough – This type of dough doesn’t expand and it really does retain its shape.

Textures look amazing and they could probably even be finer, i’m thinking 6 mil traces with .01” pitch.