LED Gummy Candies

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https://learn.adafruit.com/led-gummy-candies

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Overview

Ever look at a pile of 10mm LEDs and think "mmm, they look just like gumdrops!" These LED gummy candies are so realistic they'll have your friends fooled at first, then delighted that they are actually edible (and delicious). This tutorial covers the basics of food-safe silicone mold making and provides a recipe for gummy candies you can make at home.

The legs are 3D printed in PLA (corn-based plastic) and they function like toothpicks, we inserted them while the gummies we cooling. It should be noted that gummies are a low-temperature candy, do not use 3D printed parts with any high-temp hard candies!

Photo below by johngineer!

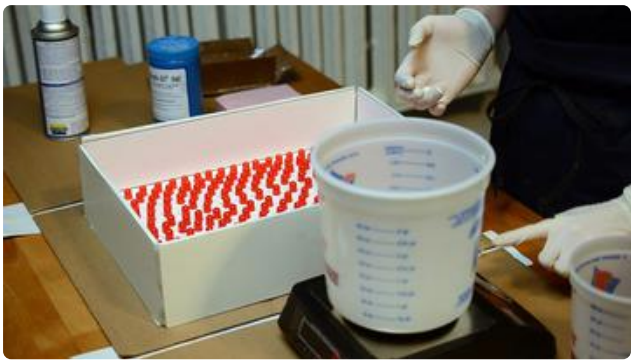
Food-Safe Silicone Mold

Measure a spot in your freezer where your mold will fit, and cut a piece of foamcore to those dimensions. (My freezer has a drawer that's 15 x 11 inches.)

Cut four mold walls to match the sides of the bigger piece:
2 pieces @ 4 x 15 inches
2 pieces @ 4 x 11 inches
Mark each mold wall with a level line one inch from the edge. This will be your glue line-- the floor of the mold must be lifted from the table to leave space for the legs of the LEDs to poke through/splay out.

Glue up the walls of the mold box with a hot glue gun, applying extra glue at the corners and the "undercarriage" of the mold-- it must be a liquid-tight seal to prevent liquid silicone from seeping out!

Use an awl to poke starter holes for a whole bunch of 10mm LEDs. Poke the leads of the LED through the foamcore mold floor and splay the leads out on the opposite side to hold the LED tightly in position. Repeat for as many LEDs as you can fit in your mold box-- we lost count around 180, but your mold can be any size.

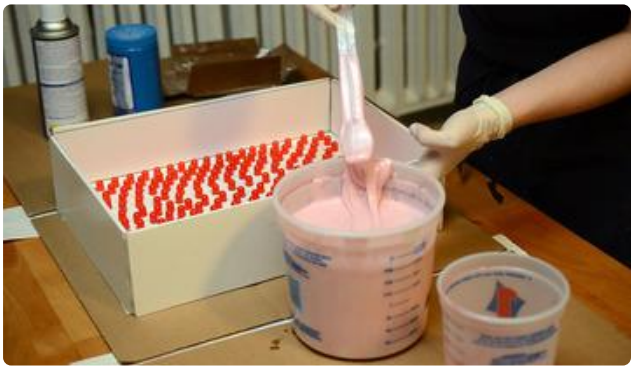


Place a large mixing tub on a very accurate scale and zero it out. Pour part A of your food-safe silicone () into the tub, approximating the volume needed to submerge the LEDs in the mold box.

Wear rubber gloves when casting with silicone, and be sure to cover your work surface and yourself to protect against messy spills.

This food-safe silicone says to mix part A and part B in a 10:1 ratio by weight, so place a smaller mixing tub on the scale, zero it out, and pour in part B to equal 10% of part A's weight from the previous step.

Our measurements:
2000g part A (tan rubber)
200 g part B (red catalyst)



This stuff is harder to mix than peanut butter. Just keep mixing, and try not to encorporate too much air into the mixture by recreating scenes from Ghostbusters 2, although extremely tempting.

Scrape around the sides and bottom of the tub to make an even mixture. Only when it is all the same color is it ready to pour.

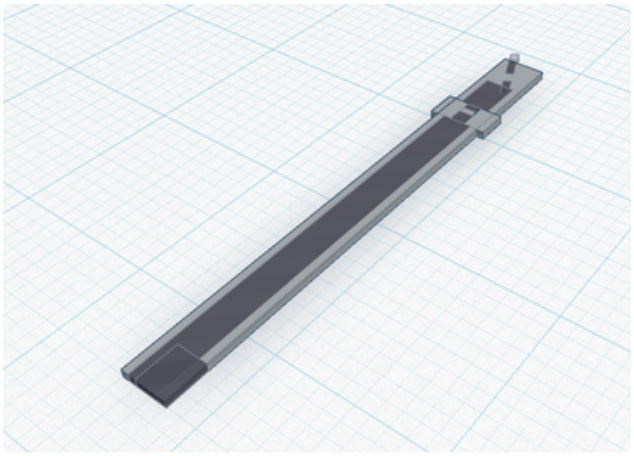
Pick a location and slowly pour in all of the silicone, scraping the sides of the tub to get it all into the mold box. Resist the urge to move the stream of pouring rubber, and rather let the silicone fill the mold box like a mudslide-- this helps avoid air pockets from forming next to the LEDs. Tilt the mold box to get the rubber to flow evenly over all the LEDs, then let the mold cure for 24 hours.

The next day, break apart the mold box and peel the silicone mold away from the LEDs and foamcore.

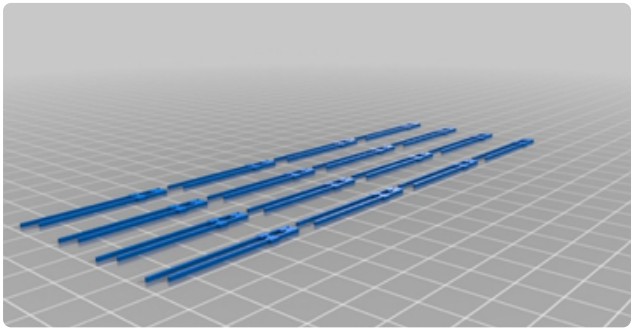
You can trim the edges with a craft knife or scissors. According to the food-safe silicone manufacturer's directions, we baked our finished mold for 4 hours at 212 degrees F, then washed it with regular dish soap.

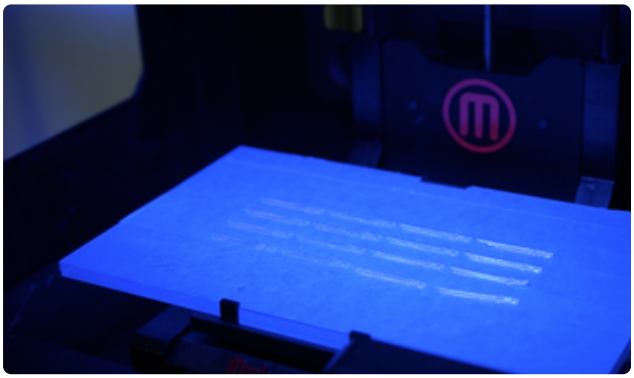
The LEDs can still be used in projects, just pull them out of the foamcore!

3D Printed Legs



We designed a toothpick-like 3D object that looks like the insides and legs of an LED. The clear gummy "lens" will let you look into the candy at this stucture, which mimics the look of a light-emitting diode. The long legs extend outside the candy to function as a way to hold onto the candies. The model was designed in TinkerCad ().

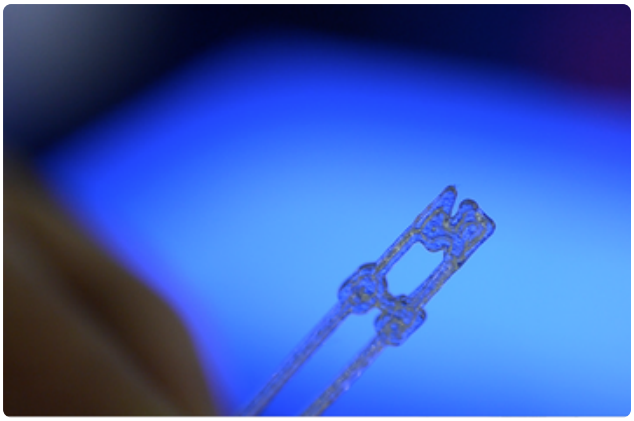




The model for this part is available on Thingiverse () as a single piece and also a 16-up, allowing you to print many at once. We found them quick to print on our MakerBot Replicator 2 in PLA (corn based plastic).

These parts will come in contact with hot gummy candy, which at its hottest is never more than 200 degrees F. The candy is even cooler by the time it's in the mold and you are jabbing at it with the tiny picks-- we don't think this contact poses any health risk to the tasters of the candy, but we'd rather print in PLA than ABS to play it safe. Wash the parts with room temperature water and dish soap in a strainer before use.

As with all Adafruit projects, this project is conducted at your own risk!



We printed these in clear PLA, but think they would also look great in other colors!

Gummy Candy Recipe

Ingredients (one batch):

- 3 packets gelatin powder ()
- 1 box Jell-O (any flavor)
- 2 teaspoons Ascorbic acid powder () (or vitamin C tablets, crushed)
- 1/3 cup cold water

Tools/parts:

- 2 cup stovetop-safe glass measuring/mixing cup
- high-temp silicone spatula or wooden spoon
- deep pan for double boiler
- plastic wrap
- candy syringes ()
- many 3D printed LED legs () in PLA (corn-based plastic)

- candy mold (make your own for this project or use any candy mold for these gummies)

This recipe is based on Instructables user SFHandyman's Lego brick gummies tutorial ()!

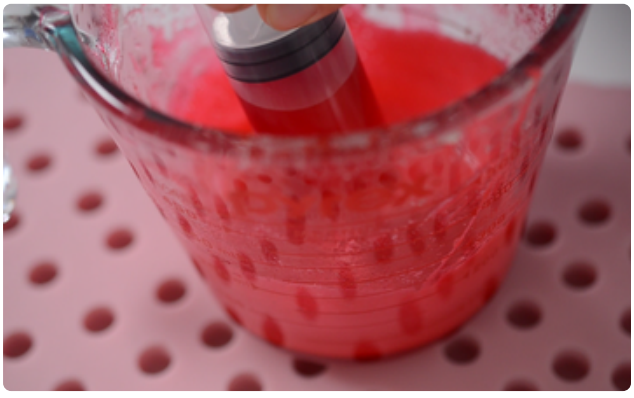
Into 1/3 cup cold water, slowly sprinkle 3 packets of plain gelatin, stiring in between additions to dissolve completely before sprinkling some more. Add too quickly and you could develop lumps, which usually can't be broken up later.

Eventually the mixture will be like a paste or dough. Cover it with plastic wrap (you can leave the spatula in) and let it rest on the counter for 10 minutes, giving the water and gelatin a chance to dissolve.

Remove the plastic and move the stovetop-safe cup to a tall-walled pan containing steadily simmering water. No need to stir it while the mixture is melting down.

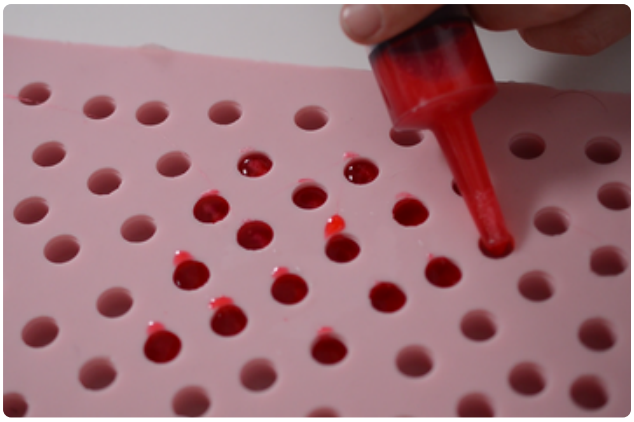
Add the packet of Jell-o, a little at a time, stirring slowly so as not to add extra air to the mixture, which will make your candies cloudy.

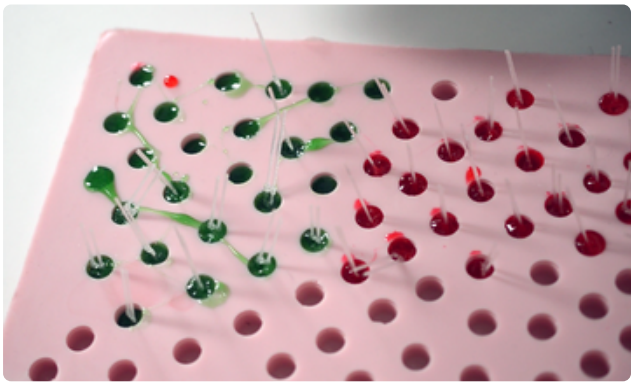
Turn off the heat. Add 2 teaspoons of ascorbic acid and stir gently to dissolve. Ascorbic acid is pure vitamin C and will add tartness to the flavor of the candy (as well as change up that distinctive Jell-O flavor). Add it at the last moment before cooling-- heat has a way of distorting fragile flavors.



Refrigerate the mixture for ~5 minutes. Notice as the air escapes the mixture, you're left with super clear candy at the bottom of the cup and cloudy candy covered in a layer of foam on top. Use the candy syringe to slurp up the clear candy at the very bottom. Use this syringe to make clear-lens LEDs, then slurp up the cloudy layer for some diffused-lens LEDs. =]

Also place your mold in the freezer 5 minutes before casting. The cool rubber will help set the candies faster.





Fill the cavities of the mold with candy. Start with a small area, then insert the 3D printed legs while the candy is cooling. There is a "sweet spot" where the candy is solid enough to support the legs but still molten enough to stick.

Put the mold in the freezer for a few minutes or in the fridge until you're ready to unmold your candy.

Bend and flex the mold to help the candy come away from the mold, and pull the candies out onto a piece of parchment paper.

Allow the candies to air dry if you wish to bag them up together (prevents sticking), or just present them to your friends and eat them right away!

Photo by johngineer!