Bucknell UNIVERSITY

Light-up Acrylic Sign

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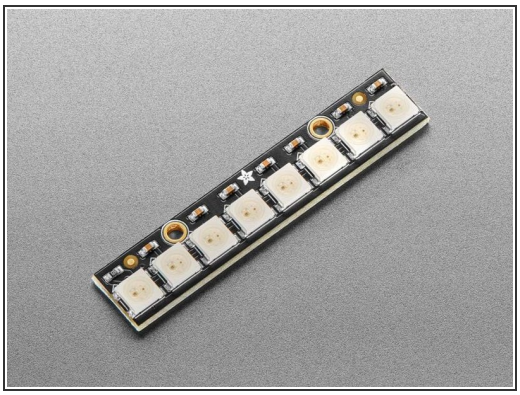
INTRODUCTION

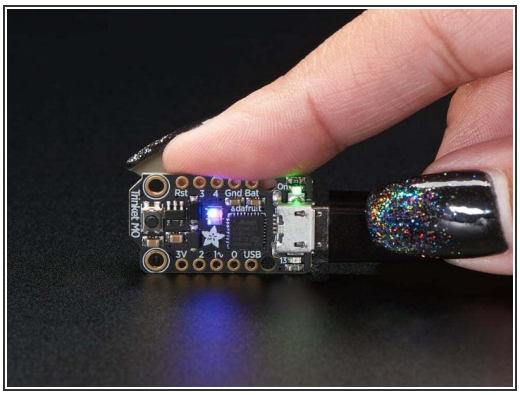
Learn to make a light-up sign with clear acrylic and the laser cutter! This guide will cover how to etch the acrylic and make the base! You can also use a pre-made base. Before starting this guide, you should be certified to use a laser cutter.

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Step 1 — Materials





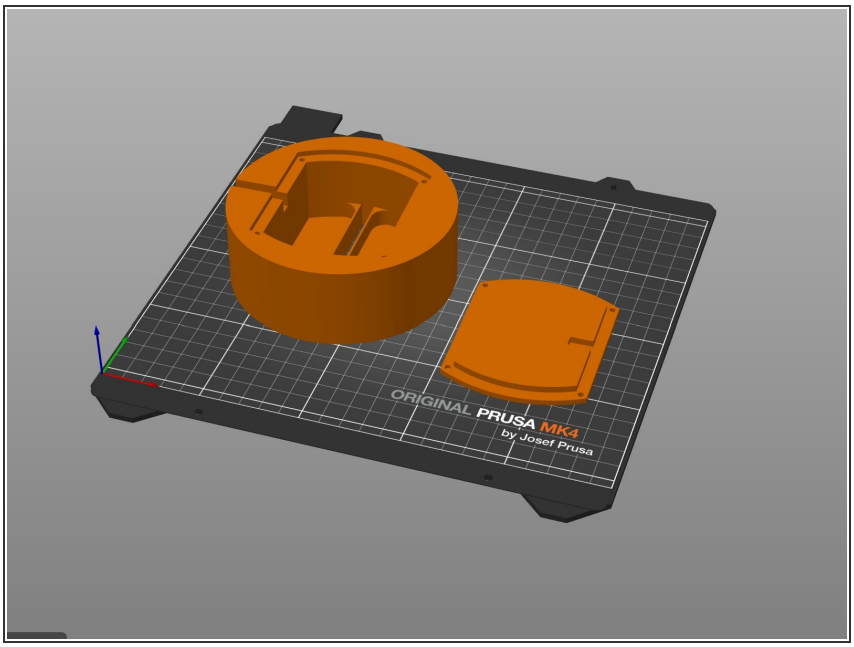


- There are two ways to do the base for this project. You can make a base yourself or buy one on Amazon.
  - To make the base yourself, you'll need a NeoPixel stick, an Adafruit trinket or QT PY, a USB cable, and some jumper wires.

⚠ If you buy a base, make sure it comes with acrylic! The acrylic kept in the makerspace won't work with the pre-made bases!

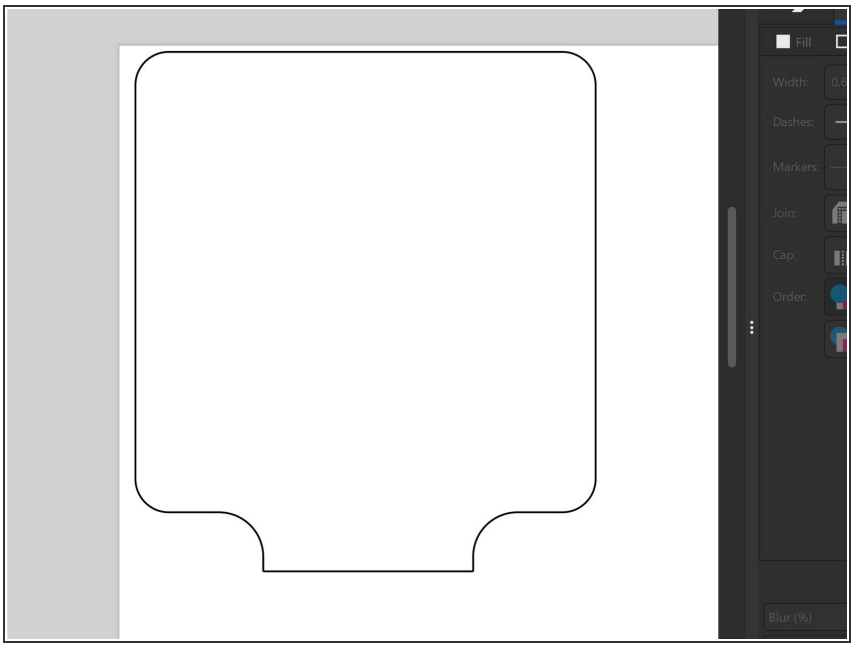
- You'll need to be able to use the laser cutter, and- if you're making the base- a 3D printer and a soldering iron.

Step 2 — Making the Base- pt.1



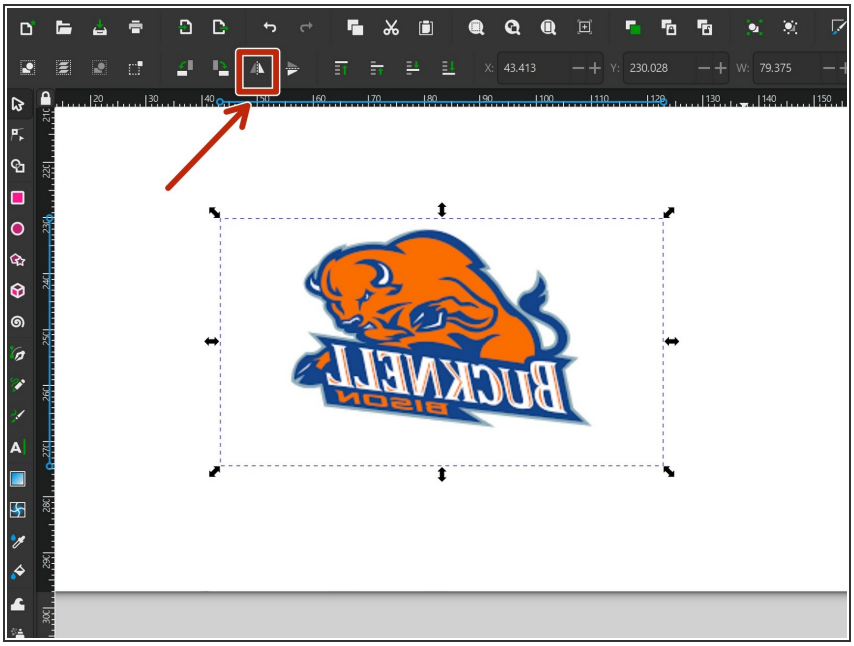
- Download the file for the base here. The model is originally from thingiverse, and has had some basic modifications made to it.
- 3D print the base using any filament color
- The base takes a while to print, so come back when it's finished printing

Step 3 — Acrylic template



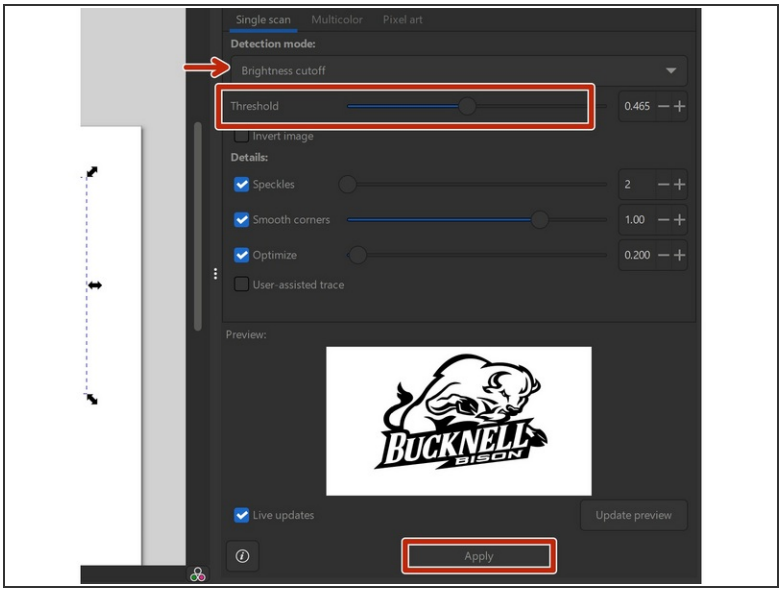
- If you are using a pre-made base, skip this step
- Open Inkscape, which is avaliable on all computers in the Maker-E (or download it here)
- In the Maker-E google drive download the file named sign_template
- Open the file in inkscape, it should look like the first image

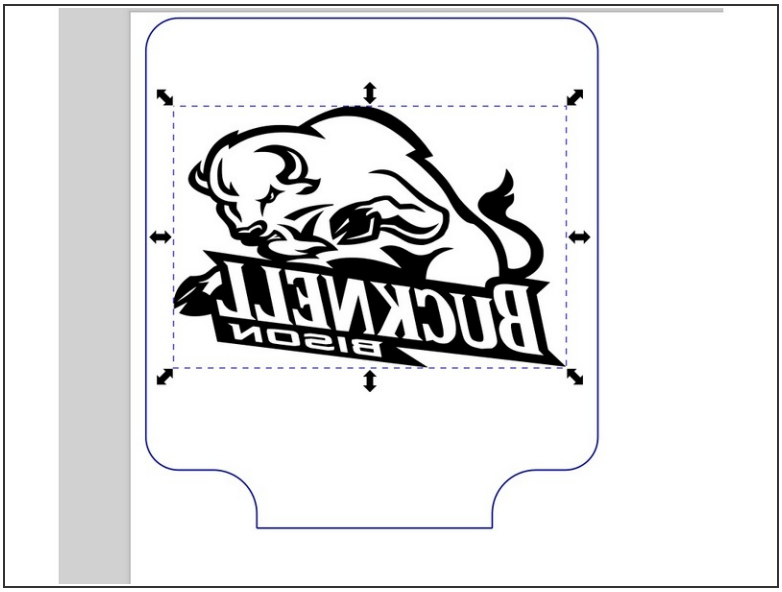
Step 4 — Find a design for your sign



- Find a design you'd like to use for your sign. Designs that are black and white or have contrasting colors work best!
- Import the image into Inkscape
- Use the flip horizontally button to mirror the image
  - ⓘ Mirroring the image will let you view it from the non-etched side, which looks better!

Step 5 — Trace bitmap



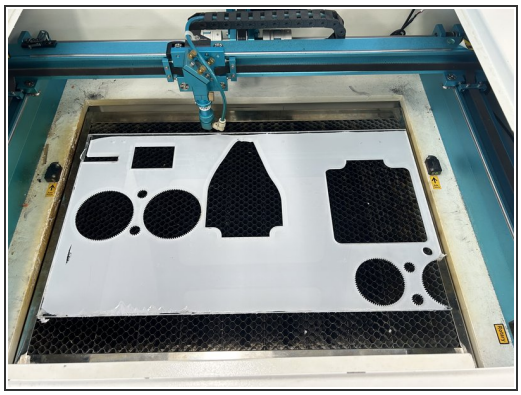


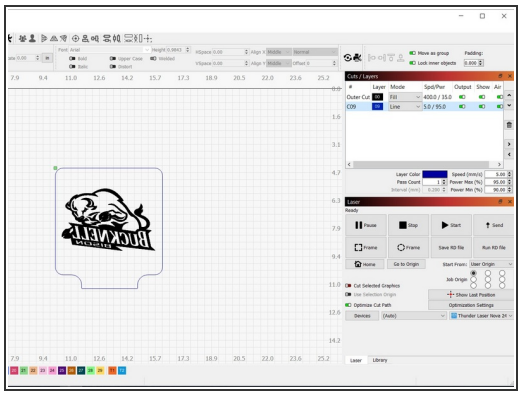
- Use Shift+Alt+B to open the trace bitmap menu. Play with the different detection modes until you find one you like.
- Play with the threshold slider until you are happy with the preview of your image
- Hit the apply button, and Inkscape will generate a vector graphic. It may take a few seconds to work.
- Take the new graphic and position it however you'd like.

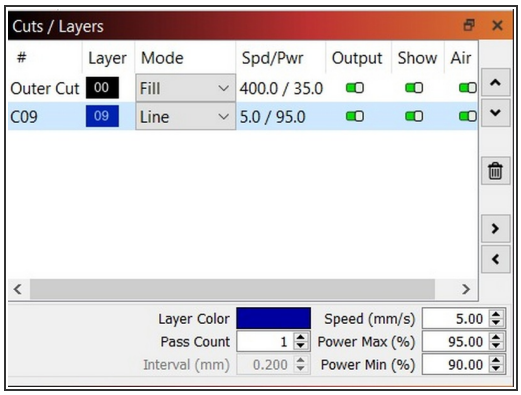
⚠ If you bought a base, make sure that your design will fit on the acrylic that came with it!

- Delete the original image. Save the sign as an SVG file.

Step 6 — Laser cut the acrylic







- Grab some 6mm clear acrylic (or the pre-cut acrylic if you bought a base) and load it into the laser cutter. Peel the paper off the top of the acrylic.
- Load your sign file into Lightburn. Adjust the cut settings to that the image is engraved and the edge of the sign is cut

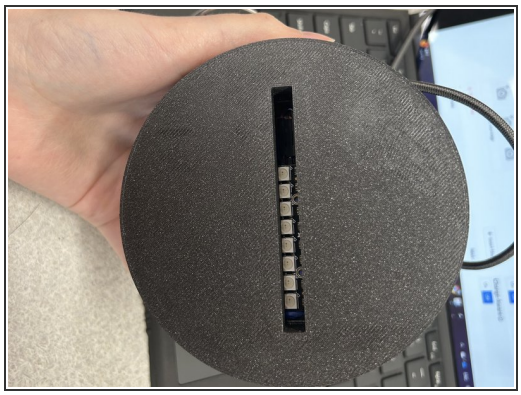
  ⓘ You may have to change the mode on the image to fill!

  ⚠ If you bought a base, and are unsure of which settings to use, ask for help!
- Laser cut the acrylic sign
- Peel the backing paper off the acrylic. Rinse the acrylic with water to get rid of the remaining dust

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Step 7 — Making the Base - pt.2





- To learn how to set up the NeoPixel stick, check out this tutorial
  - ⓘ You may have to solder pins onto your board and neopixels!
- Tape the neopixel stick so that it faces up towards the acrylic slot.
- Run the USB cable through the opening in the base.
- Snap the bottom of the base on.

Step 8 — Add the acrylic to the base



- Slot the acrylic into the base
- Plug the base in and admire your sign!