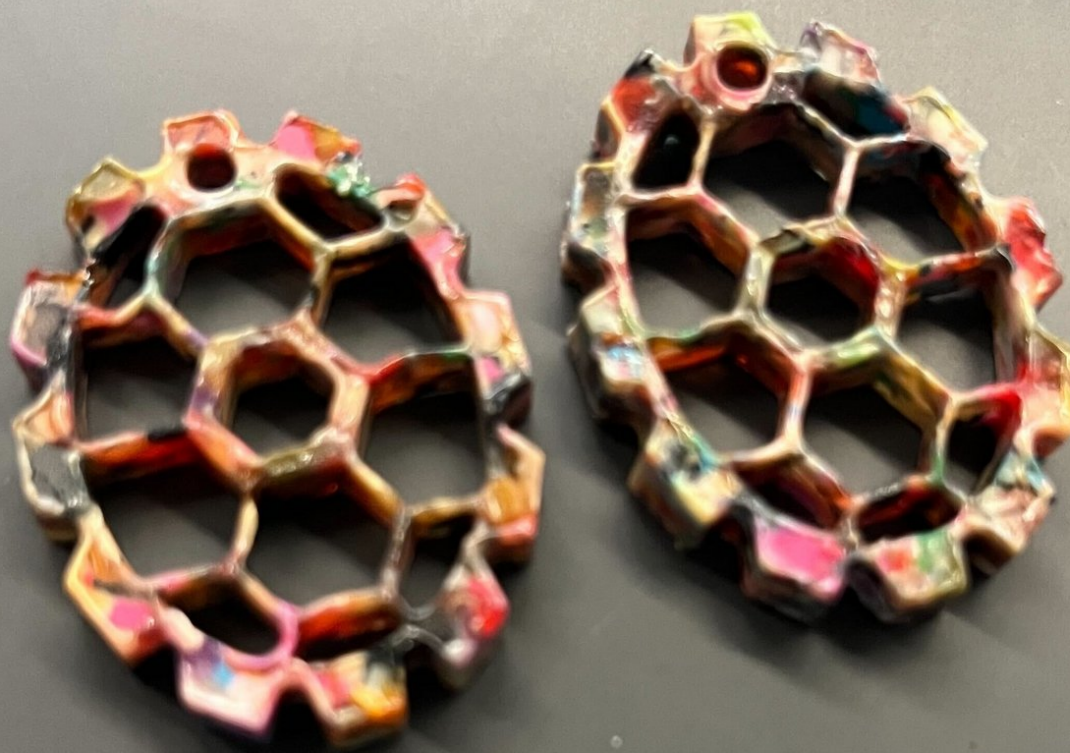




# Making a PLA Sheet

How to use the PLA chips to make a flat thin sheet that can be cut in the Water Jet.

Written By: Elizabeth Marie Rand





## TOOLS:

- [Toaster Oven](#) (1)
- [Baking Pan](#) (1)
- [Oven Mitt or Welding Glove](#) (1)

## Step 1 — Calculating PLA Mass

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- In order to get a PLA sheet with the desired thickness, we must use a specific amount of PLA shavings. Keep in mind a few things: PLA density is  $1.24 \text{ gcm}^3$ , our tray is  $31.115 \text{ cm} \times 22.542 \text{ cm}$ , and a good sheet thickness is  $0.3 \text{ cm}$ .
- Use these formulas to calculate PLA mass needed:
  - $\text{volume} = \text{length of tray} * \text{width of tray} * \text{desired sheet thickness}$
  - $\text{mass} = \text{PLA density} * \text{volume}$
- So, for this tray the PLA volume needed would be  $210.42 \text{ cm}^3$  and the desired mass of PLA needed would be  $260.92 \text{ grams}$ .

## Step 2 — Preparing and Baking



- Preheat the toaster oven to 175° C on 'bake'.
- Measure the mass of PLA by zero-ing the scale with a cup on it, and then adding the PLA until it reaches the desired mass.
- Pour the PLA onto the baking tray and spread it evenly.
- Once the oven is preheated, place the tray into it. It bakes for 2 hours.



### Step 3 — Flipping the PLA Sheet



- After 2 hours, carefully remove the baking tray from the oven and set it down somewhere flat and safe.
- Wait around 20 minutes for it to cool, and then remove the PLA sheet from the baking tray.
  - This may take some effort but be sure not to break or bend the PLA sheet.
- Flip the PLA sheet over in the baking tray, and bake it in the oven for another 1 hour on 175° C.

### Step 4 — Removing the Sheet



- When the 1 hour is up, carefully take the baking tray out of the oven. Place it somewhere flat and safe again.
- Let it cool for 20 minutes and then remove the PLA sheet from the pan again.

Congratulations! You have made a PLA sheet.