

# Tortilla Maker User Manual

High Tech High  
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## Background/Motivation:

Our reason to make this tortilla stove was to make tortillas fast. Our design allows the user to flatten tortillas and cook them right after they are flattened. In class we learned how to make simple tortillas, to flatten the tortilla dough up to 10 seconds and we needed a easy method to make them thin and even. With one step of opening the stove and squishing the dough you can immediately start cooking the dough. People in developing countries will hundreds of tortillas each day and can't afford professional machines. With our machine made out of two pans, metal, a door hinge and two heating elements, materials are easy to supply. When making a tortilla the old fashioned way, it can take up to 20 seconds just to flatten it, with our machine it takes up to 5 seconds to flatten the dough.

## Design:

For our machine we made tortilla stove and maker. The two pans will come together using a hinge to flatten out the ball of dough. The two pans on the open end have a sheet of metal concealing the openness to cook the tortilla. In side of the pans there are two heating element. there is one heating element in each pan.

## User Instructions:

- Start by plugging the electric plugs into two outlets turning on the machine
- Wait for it to heat up for about 10-15 minutes
- Lift the pan up and lightly coat both pans with butter
- In between the two pans place a ball of dough in between the top and bottom pan.
- Close the pans , pressing the dough into a tortilla of your desired size.
- Keep pans close for about 2 to 3 minutes, depending on how thin they are
- Lift pan open and take tortilla out
- Repeat steps 3-8 to cook as many tortillas as desired
- After you're done cooking your tortillas unplug machine
- Let machine cool for about
- Clean pans with a wet paper towel

### **Basic Recipe**

2 cups masa harina

1/2 teaspoon kosher salt

1 1/2 cups hot water (hot tap water is fine)

## Testing and Calculations:

When testing the Tortilla Stove our group came out with results such as testing the temperature in celsius. In order for the machine to fully work it will have to reach about 190 degrees celsius. Approximately that will take about 10-15 minutes according to our results on warming up due to about any climate.

### Calculations:

Before we tested we calculated the size of the tortillas to show which size would be eligible for the machine. My measuring the size with a compass we estimated that tortillas 5 inches and lower would work for making tortillas.

## Lessons Learned/ Future Development:

There are a few changes in order to improve our design. One of the main things to improve is the appearance. Having two pans that are the same size would create more constant tortillas and be easier to store.

Another change is to have only one plug instead of two. This would make it simpler to plug in and easier for the user. The tortilla maker has wires that can only hold the electricity for one heating element. To use only one wire would mean that the new wire that is thicker to contain that amount of energy.

There are a few issues with the heating element, such as it was too big to fit in the pans, the little metal piece at the end broke off, and there was a good chance of it short circuiting. A few things to improve the heating elements are getting bigger pans to fit the elements, carefully remove the heating elements from the bread machine, and cover the holes (that the heating elements come out of) with some sort of insulator to ensure the tortilla maker doesn't short circuit.

Another main challenge while working with the tortilla maker is the imperfect fitting of the hinge. Due to the pans being round and the hinge being flat the hinge can not attach through all three holes. This leads the pan to be crooked if fully tightened. The current draft of the tortilla maker has the hinge loosened slightly to ensure the tortillas would be perfectly flat.

The last thing to change is the cover of the pans. To improve the design holders need to be placed in a more strategic way to ensure that the cover doesn't fall off while in use.