

Procedure for Recording Temperature Profiles in a Commercial Oven – Flour Tortilla

Step 1: Format the Data Logging Device

- Prepare the data logging device for use by setting to record temperatures at a frequency of every 5 seconds. *This duration may be adjusted to best fit your environment.
- Select either °F or °C for recording temperatures; the final calculator is equipped to convert between these values.
- Refer to your device's quick start manual for detailed instructions on preparing your specific logging device.

Step 2: Use of Data Logger for Temperature Collection

- Follow your data logger device's specific procedures to start recording.
- Collect tortillas directly out of the oven from one side of the oven (i.e. row 1, right side, front side) and place on a collection pan adjacent to the data logger device. Collect the number of tortillas that correspond to the number of channels/thermocouple leads on the data logger device.
- As quickly as possible from the tortilla exiting the oven, place a thermocouple into the geometric center of the product (see Figure 1). Fold the tortilla over the thermocouple to completely cover the recording tip (see Figure 2). Repeat with each tortilla, one tortilla per channel/thermocouple.
- Place tray into an area or onto a line (if possible) that mimics the cooling conditions of the tortilla.
- Record data for a time equal to a minimum of half of the typical cooling time. For example, if typical cooling time is 10 minutes record data for a minimum of 5 minutes.
- Follow the device instructions for removing probes and ending recording.
- Download the recorded data to a computer and prepare the data logger for another run.
- Export the data from each run into Excel format and save for later use. For quick reference, save each run under a new tab in the same Excel worksheet.
- Repeat this process until data from a total of three product runs has been recorded. Then repeat the process for tortillas collected from the opposite side of the oven (i.e. row 4, left-side, back-side).

Step 3: Data Compilation and Oven Validation

- Using the Excel files from the three completed runs, determine which probes reached the lowest maximum temperature out of the oven for each run.
- Converting the Excel data into graphical format allows for easier selection of the coolest probes. In Excel, highlight the entire data series for all probes, select the **Insert** tab and click on **Insert Line Chart** icon. A graph will display next to the data columns on the worksheet. The lowest line represents the coolest sensor (time along x-axis, temperature along y-axis).
- Copy and paste the column of data for the coolest sensor across all runs into the appropriate Baking Process Kill Step Calculator tab.

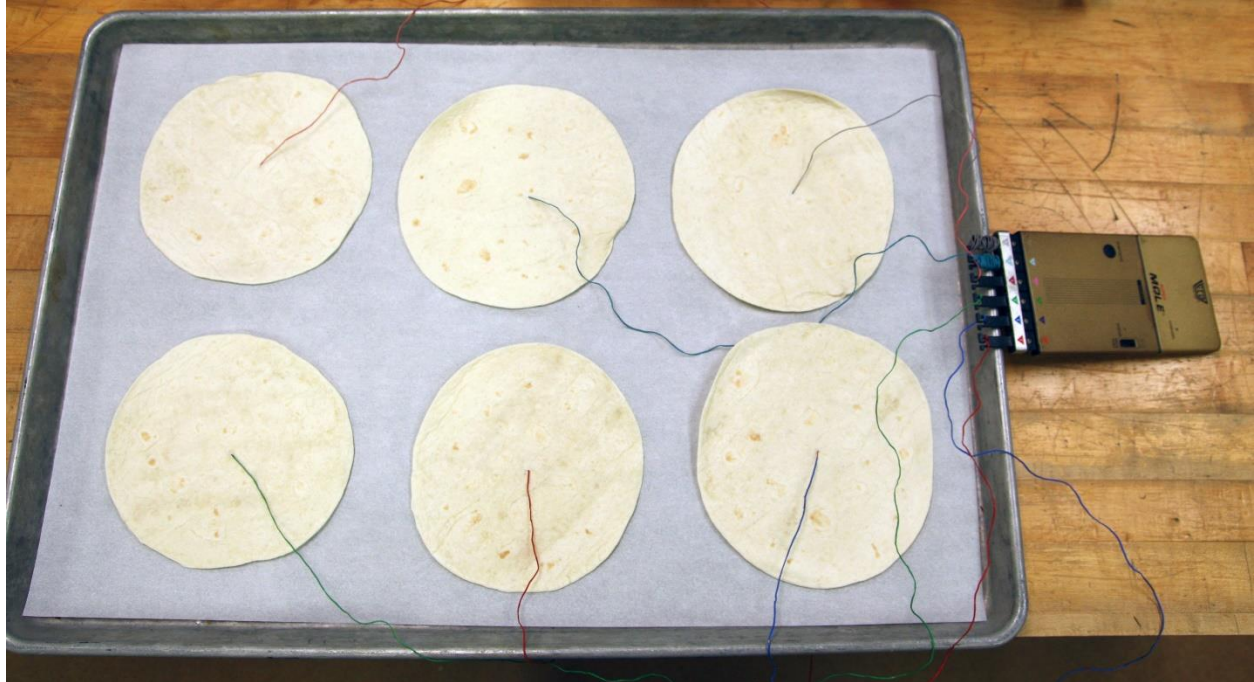


Figure 1. Probe placement on tortilla



Figure 2. Tortilla presentation for temperature recording.