

Determining the Percentage of Water in Popcorn

Background: In each kernel of popping corn, there is a small drop of water in a circle of soft starch. When heated, the water expands and builds up pressure against the hard outer surface, eventually exploding and turning the kernel inside out.

Purpose: What is the percentage of water in un-popped popcorn?

Prelab Question: How can we calculate the percentage of water in un-popped popcorn?

Procedure:

1. Record the mass of an empty brown paper bag.
2. Add ¼ cup of popcorn kernels to the paper bag and measure and record the mass.
3. Fold the top of the paper bag down twice.
4. Microwave the paper bag until the popping slows to about 5 seconds between pops (about 2 minutes... depends on the microwave you use).
5. Open the bag to let the steam escape for a couple of minutes. **DON'T EAT ANY YET!**
6. When cooled record the final mass of the bag and all the popcorn.
7. Determine the mass of the water missing.
8. Calculate the percentage of water in the original un-popped kernels.

Observations: (1 mark)

	Trial #1	Trial #2	Trial #3
Mass of the paper bag (g)			
Mass of the bag and un-popped kernels (g)			
Mass of the bag and popped popcorn (g)			

Calculations: (5 marks)

	Trial #1	Trial #2	Trial #3
Mass of the un-popped popcorn (g)			
Mass of the popped corn (g)			
Mass of water lost by popcorn (g)			
Percentage of water in un-popped kernels (%)			
Average % of Water:			

Conclusion (1 mark): What is the percentage of water in un-popped popcorn?

Analysis (3 marks):

1. What did you see at the bottom of your bag after you finished eating the popcorn?

2. What assumption did you make about the popcorn?

3. Why didn't it all pop?

4. What are some sources of error in this lab?