**Popcorn Lab 100 points**

**Lab: For full credit, fill in the following information that pertains to the lab. All work must be completed and submitted by the end of the period. This is a group assignment, so all need to participate and help one another for the grades.**

**Names of your group** members:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Roles:**

Recorder:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Counter of freezer popcorn:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Counter of room temp popcorn:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Problem/Purpose**

You are working at a movie theater and your boss comes up to you with a problem. He mentions that the production of popped popcorn is too low; every batch has a high amount of unpopped kernels. You research something online that if you freeze your popcorn then try to pop it, you will yield a better result.

**The purpose of this lab is to determine**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Research**

Each kernel of popcorn contains a small drop of water stored inside a circle of soft starch. Popcorn needs between 13.5-14% moisture to pop.  The soft starch is surrounded by the kernel's hard outer surface.

As the kernel heats up, the water begins to expand.  Around 212 degrees the water turns into steam and changes the starch inside each kernel into a superhot gelatinous goop.  The kernel continues to heat to about 347 degrees.  The pressure inside the grain will reach 135 pounds per square inch before finally bursting the hull open.

As it explodes, steam inside the kernel is released.  The soft starch inside the popcorn becomes inflated and spills out, cooling immediately and forming into the odd shape we know and love.  A kernel will swell 40-50 times its original size

Cut and paste from <http://www.popcorn.org/ForTeachers/TeachingGuide/WhatMakesPopcornPop/tabid/88/Default.aspx>

**Based on the information, write a hypothesis based on your purpose.**

If I store the popcorn in the freezer, then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Materials:**

* 2 bags of unpopped popcorn (one out of the box and the other out of the freezer, make sure they are the same brand and flavor)
* Microwave (note the brand and watts)
* Paper towels

**Procedures:**

1. Collect the materials.
2. Place the room temperature microwavable popcorn into the microwave with the flaps facing up.
3. Set the microwave for 3 minutes for the room temperature popcorn. Wait for the timer to go off
4. CAREFULLY remove the popcorn from the microwave when the microwave beeps.
5. Open the bag onto the paper towels
6. Count the popped popcorn and the unpopped kernels and record your data
7. Repeat steps 2-6 for the freezer microwavable popcorn.
8. One you are cleaned up and got your data, enjoy your results.

**What is the lab safety for this lab?**

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|  |  |  |
| --- | --- | --- |
|  | Room Temperature | Freezer |
| Popped popcorn |  |  |
| Unpopped popcorn |  |  |

**Conclusion:**

1. Was your hypothesis correct?
2. Were there any notable errors that pertain to the lab?
3. Why do you think your hypothesis was correct or incorrect? (look at the research provided as a reference)