

# Sunset in a Bag

A photograph of a sunset seen through a narrow opening in a forest. The sun is low on the horizon, casting a warm, golden glow. The sky is a mix of orange, yellow, and light blue. The trees on either side are dark and silhouetted against the bright light. A path leads from the foreground towards the opening in the trees.

Chemical Changes lab

# Purpose

.The purpose of this activity is to observe and identify the chemical changes that take place during a chemical reaction.

**.Question:** How can you determine if a chemical change has occurred?

# Background Information

.There are several sign that a chemical reaction has occurred:

.Color changes

.The production of a gas (not changing of state)

.The production of light

.Change in temperature

.Flames or explosions

.[Video](#)

.In this lab, you will see:

.A color change : phenol red is an acid base indicator that turns orange and yellow in response to acids, and purple to bright pink in response to bases.

.The production of a gas

.An endothermic reaction – needs more energy than it produces to occur, so it draws energy, in the form of heat, from outside sources. (it feels cold)

.An exothermic reaction – produces more energy than it needs to occur, so it gives off the excess energy in the form of heat. (it feels hot)

# Predict the Results

We will be mixing water, an acid indicator solution, calcium chloride, and baking soda in a plastic bag.

**.Hypothesis:** If the substances chemically react when mixed together, then \_\_\_\_\_  
\_\_\_\_\_.

# Experiment

## .Procedures:

1. Measure 20 mL of water in a graduated cylinder, 15g of baking soda, and 10g of calcium chloride into separate weigh boats.
2. Pour the water into a zip top sandwich bag. Add 15 – 20 drops of phenol red. Seal the bag and mix by gently squishing the bag.
3. Observe and record any changes.

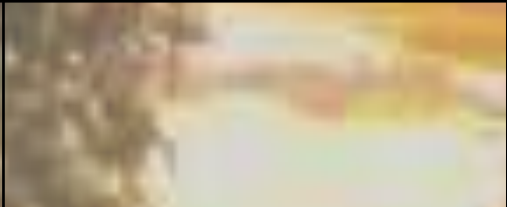


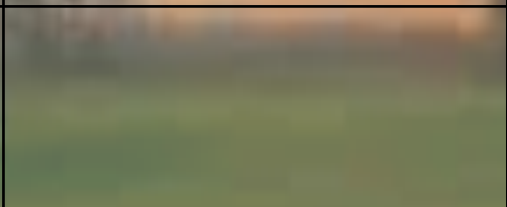
4. Add the 10g. Of calcium chloride to the solution in the bag. Seal the bag. Gently mix the contents. Observe and record any changes that occur.

5. After the reaction is stable, add the 15g. Of baking soda to the solution. Quickly reseal the bag. Mix the contents by gently sloshing the bag. **DO NOT SHAKE!** Observe and record any changes that take place.

6. The liquid produced is inert and may be cleaned up with water and a sponge. Rinse any remaining liquid down the sink.

# Record & Analyze Data

## Data & observations: Sunset in a bag

Substances add to bag	Change observed	Explain what type of reaction took place and give evidence.
+water		
+ phenol red		
+ calcium chloride		
+ baking soda		



# Draw a Conclusion

## Conclusion:

1. What did it tell you about the water before anything was added to it?
2. When you added the calcium chloride, what did the change in color indicate?
3. Was this an exothermic or endothermic reaction? Explain how you know.
4. When you added the baking soda, what did the change in color indicate?
5. Was this an exothermic or endothermic reaction? Explain how you know.
6. Why did the bag inflate?

# Errors & Extensions

## .Errors & New Questions

.Systemic Errors:

.Random Errors:

.New Question: How could you extend this activity?