

# Lab: Flame Test

**Main Idea:** Whoops!!! You're crazy teacher got her chemicals mixed up. It's your job to help her figure out which is which. This is what we know:

1. All of the chemicals are **salts**. A salt is any compound made of chloride (a halogen) and an element from groups 1 and 2 on the periodic table (Alkali & Alkaline Earth metals).
2. **Some chemicals can be identified by the flame they produce.** All of these compounds are **flammable**, meaning they burn. The different colors of the flames are the results of burning these different compounds.
3. The table to the right lists some chemicals and the colors they produce.

Element	Color
Barium	Yellow-green
Calcium	Orange-red
Copper	Blue-green
Lithium	Crimson Red
Potassium	Pale Violet
Sodium	Yellow
Strontium	Red

**Materials:** small beaker                      aluminum foil for candle wax  
paper towels                                  safety glasses for everyone  
candle    7 small vials of different salts  
4 wood splints

## Safety First!

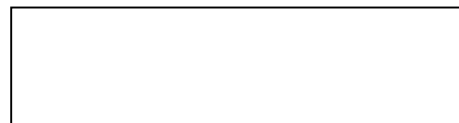
1. You must **wear goggles** at all times during the lab – these chemicals sizzle!
2. **Do NOT touch** the chemicals with your skin or clothing. If you do, wash immediately.
3. Keep **hair** tied back and **sleeves** rolled up.
4. **Pay attention** to what you are doing and to those around you.



## Lab Procedures:

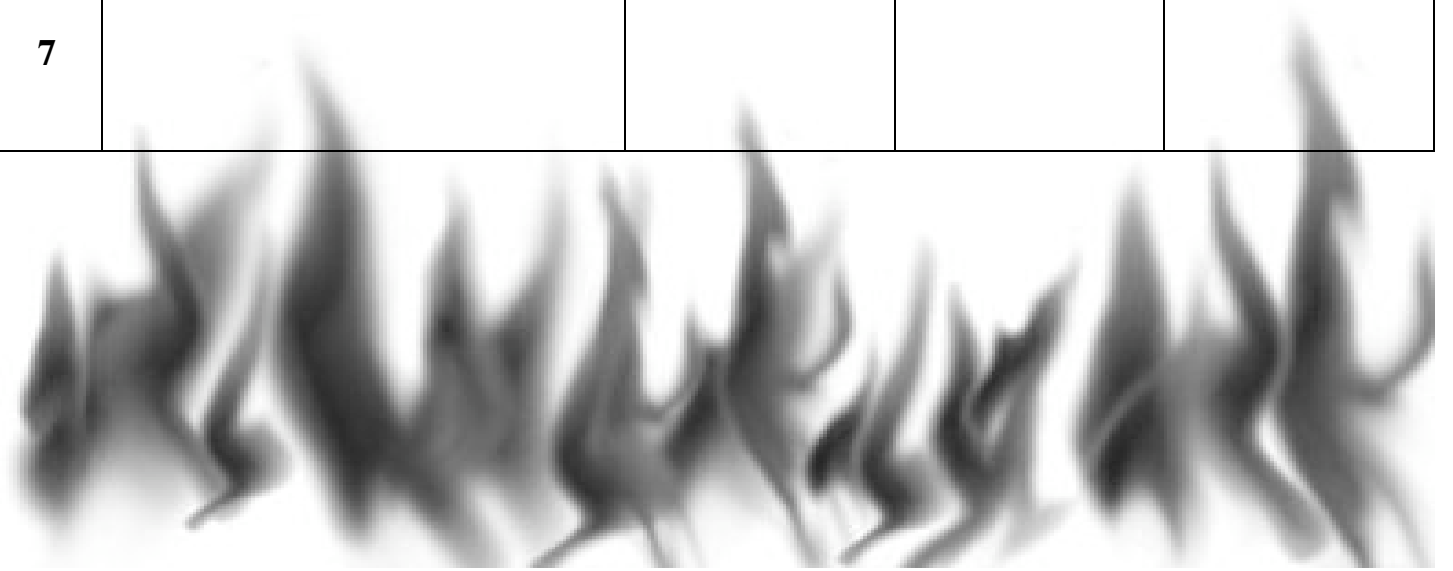
1. Read the following directions, #2 - 10, with your group before starting.
2. Fill your beaker with water and place your candle on the foil.
3. Raise your hand to begin. Your teacher will light the candle.
4. Choose one vial of "salt" from the collection. Carefully observe it with your **EYES ONLY**. Write down your observations of its physical properties on the chart.
5. **Predict the flame color** of this salt by recording your prediction on the chart.
6. Carefully have one person from your group dip the end (about 1/2 cm only) of the soaked wooden splint into the chemical so that you've collected a small amount of salt on its tip.
7. Carefully put the salt into the flame. For best results, aim the end of the stick to the side of the flame, rather than directly above it. Look very carefully, the flame will change color around the outside! It will not last long and you may only see it a little bit. **Observe and record the flame color.**
8. Dip the splint in the water. If it was not charred, you may be able to use again. Otherwise, use the other end of the splint for the next vial.
9. Repeat steps 4-8 for each vial of salt.

**Clean Up:** Throw away all used paper towels and splints. Make sure all vials are sealed tightly and placed back in the plastic bag. Place your candle and foil gently in your tub. Organize, clean counters, check bin back in to your teacher and return to your desk to work on the next few pages. Then, once settled, raise your hand to get a stamp →



Data Table Title: \_\_\_\_\_

<b>Vial #</b>	<b>Physical Properties before Burn</b>	<b>Predicted Color</b>	<b>Actual Color</b>	<b>Predicted Element</b>
1				
2				
3				
4				
5				
6				
7				



# Flame Test Lab Assessment

Complete this section after your lab is finished.



1. Which of the salt compounds tested was your favorite and why?
2. How many of your color predictions were accurate, not accurate? Any major surprises?
3. Why do halogens, like chlorine, tend to form compounds with the alkali metals?
4. Let's say your friend was absent for this lab. Write them a note, with 5 safety tips, explaining how to be safe when working with flames in a lab.
  - 1.
  - 2.
  - 3.
  - 4.
  - 5.
5. Imagine you work for a fireworks company and have access to the salt compounds you used in today's lab. Using 3 or more compounds from today's lab, draw & color a firework below.