



MAKING HOMEMADE CANDLES

AND STUDYING COMBUSTION



In this experiment, you will make your own candle and then study how it burns. You will observe the flame, record data, and learn about the science of **combustion**.



OBJECTIVE

1. Make a homemade candle.
2. Observe and investigate the process of combustion.
3. Record and analyze your observations.



MATERIALS

- Soy wax flakes or beeswax pellets (1 cup)
- Candle wick (with a metal or sticker tab)
- Small glass jar or metal tin (clean and dry)
- Double boiler or heat-safe bowl and saucepan
- Pencil or skewer
- Thermometer (optional)
- Matches or lighter (adult supervision)
- Heat-safe surface or tray
- Notebook and pen
- Safety goggles (recommended)



SAFETY FIRST

- Always have an adult present.
- Melt wax carefully. Do not let it get too hot.
- Keep flammable items away from the flame.
- Never leave a burning candle unattended.
- Let the candle cool before handling.



BACKGROUND

Combustion is a chemical reaction between a fuel and oxygen that produces heat and light. In a candle, the wax is the fuel. When the wick is lit, the heat melts the wax near the wick. The wax vapor rises, reacts with oxygen in the air, and burns, producing the flame. Different parts of the flame have different temperatures.



PART 1: MAKING YOUR CANDLE

1. Prepare the wick: Press the wick tab into the center bottom of your jar or tin.
2. Secure the wick: Tie the wick to a pencil or skewer and rest it across the top of the jar so the wick stands upright.
3. Melt the wax: Add wax to the top bowl of a double boiler. Heat gently until the wax is completely melted. (Do not let water touch the wax.)
4. Pour the wax: Carefully pour the melted wax into the jar, leaving about 1/2 inch of space at the top.
5. Let it cool: Allow the candle to cool and harden completely (2–4 hours).
6. Trim the wick: Cut the wick to about 1/4 inch above the wax.



PART 2: STUDYING COMBUSTION

1. Light the candle (adult supervision) on a heat-safe surface.
2. Observe the flame for at least 10 minutes.
3. Record your observations in the data table.
4. Investigate the flame:
 - Look closely at the different parts of the flame.
 - Use a thermometer (carefully!) to measure the temperature at different parts of the flame. (Do not let the thermometer touch the wick.)
5. Extinguish the candle safely.

DATA TABLE: FLAME OBSERVATIONS

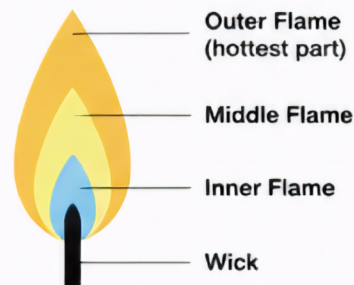
Time (min)	Flame Height (cm)	Observations (color, size, smoke, changes)	Temperature (°C) (if measured)
0			
2			
4			
6			
8			
10			



ANALYSIS & QUESTIONS

1. What happened when you first lit your candle? _____
2. What did you notice about the flame over time? _____
3. Which part of the flame was the hottest? Why do you think so? _____
4. What is the fuel in your candle? _____
5. What conditions are needed for a candle to keep burning? _____
6. If you change the wick length, how does it affect the flame? (Test and describe.) _____
7. What did you learn from this experiment? _____

PARTS OF A CANDLE FLAME



CHALLENGE: Try making another candle with a different type of wax or a scented oil. How does it burn compared to your first candle?