

A STEM in the Park Take Home Activity



Science, Technology, Engineering, and Mathematics

Making Candles at Home

Recommended for ages 6 and up with adult supervision

What You Need

- Paraffin wax
- Knife
- Tin cans (coffee cans work well)
- Pot
- Water
- Wick
- Spoon
- Scissors



What To Do

1. Break or cut plain paraffin wax into chunks and put it in a coffee can or other tin can. Put the tin can into a pot filled with water that covers at least 1/3 of the can.
2. Fill another can with cold water and set it beside the stove.
3. Heat the pot until the wax is at about 160 degrees F. If you don't have a thermometer, then heat it until all of the wax is melted. Turn down the heat once you get the wax up to temperature; add color chips for color or essential oils for fragrance and stir the wax until everything is thoroughly mixed. Alternately, you could make plain white candles.
4. Cut several lengths of wick until they are about 4 inches longer than you want your candle to be (do this while the water is heating). Fourteen inches is a good length.

Continued on back

5. Pinch a wick between your fingers and dip it into the wax. Pull it out and let it cool for several seconds. Then, while the wax is still soft, pull the wick straight.
6. Dip the wick in the wax again and pull it out. Dipping it in really cold water between wax dipping will make the process go faster.
7. Continue dipping the candle until you reach the desired width. Even out the bottom, either by pushing the candle against a flat surface or by cutting the end of the candle off. Cut the wick to about 1 inch long at the top.
8. Cool the candle by hanging it with a clothespin from a clothesline.

Learn...

Burning Your Candle.

As a candle burns its fuel source, the wax, goes through each of the four states of matter. The four states of matter are Solid, Liquid, Gas, and Plasma.

The wax candle, after it has hardened, is in a solid state of matter. When you light the wick and the flame burns down, the wax is melted by the heat of the flame and converts the wax to a liquid state of matter. The liquid wax is drawn to the tip of the wick, which is inside the flame and the liquid is changed into the state of matter that is gas. The gaseous wax is converted to energy, which is the plasma state of matter. The cycling through the four states continues until there is a lack of fuel for the flame and the candle stops burning.

Investigate...

- 1) How can you make the candle making process go faster? If the wax is very hot when you pull the candle up, what things can you try to cool it off faster?
Hint: Have a can of really cold water handy and dip it in the cold water.
- 2) How can I make my candle look smooth like the ones people buy in a store?
Hint: Roll it on a clean, flat surface to get rid of any bumps.
- 3) How can I make my candle burn longer? **Hint: Experiment with the temperature of the room and the temperature of the candle.**

This investigation comes from Maumee Valley Historical Society and The Wolcott House Museum Complex in Maumee, OH

Safety warning:

NEVER use water to extinguish a wax fire! If you should spill wax on an open flame, extinguish fire with baking soda which should always be at your finger tips while melting wax.

