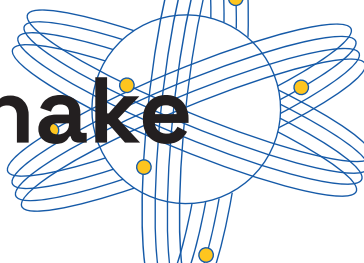


Carbon Sugar Snake



In this experiment watch three different chemical reactions occur as burning sugar transforms to slowly grow a carbon snake.

But first, let's make some predictions!

1. What do you think will happen when the flame is added to the mixture?
2. What do you think the sand or soil does?
3. Why do you use sugar?
4. How fast do you think the reaction will take?

TĪMATA! LET'S GET STARTED!

What you will need:

- 4 tsp Sugar (white granulated/icing sugar)
- 1 tsp Baking soda
- Sand (or soil)
- 50mL Lighter fluid
- A lighter or match
- Metal tray or heatproof dish

Instructions:

1. Fill your tray with sand and shape into a small mound.
2. Make a shallow crater in the center.
3. Mix sugar and baking soda in a bowl.
4. Carefully pour lighter fluid onto and around the crater making sure it is well soaked.
5. Pour the sugar/baking soda mix into the crater in the sand.
6. Time to light the alcohol using a match or lighter. Be careful you may need an adult to do this or supervise.
7. Watch the reaction
8. As the alcohol burns, the sugar and baking soda mix starts to bubble as the sugar decomposes and reacts with the baking soda, forming a growing black "snake" of carbon that rises out of the sand. **This can be a slow process so be patient. Please note that this can keep burning for up to 30min depending on amount of lighter fluid used.**

Safety first:

- Do this outdoors or in a well-ventilated area
- Keep water nearby
- Avoid breathing in fumes
- Adult supervision required

How does it work?

When the flame heats the sugar, it breaks down into a black substance called carbon. Sugar is key because it provides both fuel and the building material for the snake. **Sugar is rich in carbon (C₁₂H₂₂O₁₁)** and when it is heated it burns off its hydrogen and oxygen, leaving behind the carbon as a building block for the snake. Powdered sugar is best because the fine particles allow for a greater surface area to burn faster. Sugar also caramelizes, or becomes sticky. This helps to keep the snake from breaking apart.

The baking soda is necessary to release a gas called **carbon dioxide**. **This gas pushes the carbon upward**, creating the long, growing "snake" shape.

In Short - The heat changes the sugar into carbon, and the gas from the baking soda makes it puff up and grow like a snake.

Reflect:

- Why do you think the reaction produces a "snake"
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- Was the reaction bigger or smaller than you expected? How could you change this?