

Fight a Fire

Action

A candle will be put out using sodium bicarbonate and vinegar.

Grade Level

Grade 6 - Chemicals and Reactions

Materials

- Matches
- A candle
- Vinegar
- Glass dish
- A spoon
- Sodium bicarbonate
- Plastercine (something to hold the candle in place)

Instructions

- Secure the candle to the bottom of the dish. Sprinkle some sodium bicarbonate in the dish around the candle.
- Light the candle.
- Add some vinegar to the sodium bicarbonate and observe its action.
- Remain still and watch. The candle will go out. Try to relight the candle; it will not work.

Safety

Use caution, when working with matches or open flames, to avoid burns.

Hints

Try to keep still as the vinegar reacts with the sodium bicarbonate to eliminate extra air currents. The experiment will work better if there is no air movement in the room (for example, from fans). Also, do not use a candle that is too tall or that is too far above the edge of the dish.

Science Principle

The reaction of the sodium bicarbonate and vinegar produce bubbles of carbon dioxide. Since a candle needs oxygen to burn, the excess carbon dioxide released by the reaction of the vinegar and sodium bicarbonate covers the flame and cuts off the oxygen supply. When an attempt is made to relight the flame immediately after it is extinguished, it will not work because there is still too much carbon dioxide and not enough oxygen for the candle to burn. Eventually, as the carbon dioxide diffuses away, it will be possible to relight the candle.