

THE FIREPROOF BALLOON

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MATERIALS NEEDED:

black balloons, 9 inch round or larger (available in party shops)
candle
water
250 mL beaker or plastic cup
flame proof board (a ceramic board or equivalent)
trash can or bucket

SAFETY PRECAUTIONS:

Wear safety goggles or glasses

The burning candle presents a fire risk. A fire extinguisher should be available. (Note: For safety purposes, use a small, wide, flat bottom votive candle. This type will not be knocked over easily.)

DISPOSAL:

There are no disposal hazards in this experiment.

PROCEDURE:

Prepare ahead: Place approximately 25 mL water into a black balloon. Put the balloon into a container such as a clean 250-mL or 400-mL beaker, or a clear plastic cup. Add some additional balloons to the container, but make sure that the balloon containing the water can be easily removed.

Place a lighted candle on a flame proof board. (It is recommended to pour some hot wax onto the board and set the candle in it to prevent the candle from being knocked over.) Pick up the water filled balloon, keeping your hand in front of the balloon to conceal the mass of water in the balloon. (At this point some “misdirection” is useful. Block the audience’s view of the body of the balloon with your fingers. With your thumb press the neck of the balloon against your hand, and with your other hand, stretch the neck of the balloon two or three times.) Blow up the balloon and tie the end in a knot. Carefully, lower the balloon containing the water into the flame of the burning candle, hold it there for a few seconds, then move it away.

Ask for a volunteer to repeat the experiment with another balloon. Have the volunteer take a balloon, blow it up, and tie the end in a knot. Demonstrate the process to him/her using the balloon containing the water. Now ask the volunteer to try to do the same. If desired, repeat this with several volunteers.

EXPLANATION:

The water in the balloon will absorb the heat from the candle flame and will prevent the balloon from breaking. This is similar to the experiment where water is boiled in a paper cup.

UTILIZATION AND VARIATIONS:

(NOTE: This is not magic. It's better – it's science! Science needs an explanation.) At the conclusion of the demonstration, heat the balloon containing the water on the side while holding it over a trash can or bucket.

Demonstrate how water can be boiled in a paper cup.

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