

# Unbreakable Balloons

## **The Action**

An air-filled balloon placed over an open flame will pop but a balloon containing water and inflated to the same size will not.

## **Grade Level**

Grade 9 - Fluids and Pressure

## **Materials**

- 2 round, not inflated balloons
- matches (or a lighter)
- water

## **Instructions**

- Inflate one of the balloons with air and tie it. To the other balloon, add 60mL of water and then inflate with air so that both balloons are the same size.
- Place the air-filled balloon over the open flame. The balloon will pop.
- Place the balloon filled with water and air over the open flame. This balloon will not pop.

## **Safety**

Open flame can be dangerous if not attended to properly.

## **Hints**

When heating the balloon with water in it, try to get the flame directly under the sitting water to avoid a rather messy, unexpected pop.

## **Science Principle**

The waterless balloon pops because the flame will heat whatever is placed near it. The rubber of the balloon becomes so hot that it is too weak to resist the pressure of the air inside the balloon. On the other hand, the balloon with water and air in it does not pop because the water absorbs most of the heat that is given off from the flame. Therefore, the rubber does not get hot enough and does not weaken. As a result there is no pop.