MIND TREKKERS
Fireproof Balloon Lesson Plan

Amount of time Demo takes: 1-3 min
# times per hour: 20
Container: medium bin

Materials:
1. 2 round balloons (2 per demo)
2. several matches (1/4 large box/hr)
3. Water (fill balloon ¼ of the way full)
4. funnel (1)

Set up instructions:
1. fill balloon 1 up with air, and tie it closed
2. fill balloon 2 with ¼ way full with water, fill with air and tie it closed (you want plenty of water in bottom of balloon to ensure it does not pop over the flame)
3. light match, hold under the first balloon
4. light match and hold it under the second balloon

SAFETY!
1. Use appropriate fire safety precautions with an open flame.

Lesson’s big idea bullet points
• The balloon without water pops and and balloon with water does not pop.
• How does it resist breaking? When the water inside the balloon is placed in the flame, the water absorbs most of the heat from the flame. Then, the rubber of the balloon does not become very hot. Because the rubber does not become hot, it does not weaken, and the balloon does not break.
• Water is a particularly good absorber of heat. It takes a lot of heat to change the temperature of water. It takes ten times as much heat to raise the temperature of 1 gram of water by 1C than it does to raise the temperature of 1 gram of iron by the same amount.
• This is why it takes so long to bring a teakettle of water to boiling point. On the other hand, when water cools, it releases a great deal of heat. this is why areas near oceans or other large bodies of water do not get cold in winter as areas at the same latitude further inland.

Clean Up
Clean up any water spills, repackage everything neatly, and put it back in the kit.

References

National Standards:
K-4 Content Standard B: Physical Science, Light, heat, electricity and magnetism
5-8 Content Standard B: Physical Science, Transfer of energy, Motions and forces
9-12 Content Standard B: Physical Science, Motions and forces, Interactions of energy and matter