

LAB: ADIABATIC TEMPERATURE CHANGE

Materials: Fizz-Keeper, 1-L plastic soft-drink bottle, thermometer that fits in the bottle (liquid crystal thermometers are easy to read), water, match, (optional: flexible wire and tape).

- Place the thermometer in the dry bottle.
 - When performing an activity that uses temperature as a variable, why should the bottle be handled as little as possible? _____

- Screw the Fizz-Keeper tightly onto the mouth of the bottle. Record the temperature inside the bottle.
 - Starting temperature _____
- Pump the Fizz-Keeper 60 times. Record the temperature after pumping.
 - Temperature after pumping _____
 - Did the temperature increase or decrease? Why do you believe this happened? _____

- Pump the Fizz-Keeper an additional 20 times and record any further changes in temperature.
 - Temperature after pumping _____
- Unscrew the Fizz-Keeper. After several minutes record the temperature of the air inside the bottle.
 - Temperature after removing Fizz-Keeper _____
 - Did the temperature increase or decrease? Why do you believe this happened? _____

- Remove the thermometer and pour a small amount of water into the bottle. Swirl the water around inside the bottle for 20 seconds, then pour out the water.
 - What gases are probably present in the bottle? _____
- Screw the Fizz-Keeper tightly onto the mouth of the bottle and pump the Fizz-Keeper 60 times then quickly remove the Fizz-Keeper.
 - Is anything visible in the "space" of the bottle? If so, what? _____
- Light a match. After it burns briefly, blow out the flame, quickly drop the smoking match into the bottle, and screw the Fizz-Keeper tightly onto the bottle.
 - Can any particles be seen in the "space" of the bottle? _____
- Pump the Fizz-Keeper 60 times then quickly release the pressure. Look carefully for any changes.
 - What is visible in the "space" of the bottle? _____
 - Summarize the conditions (pressure and temperature changes) and materials needed in order to create a "cloud." _____

 - How can this happen naturally in the atmosphere? _____
