

Make a Thermometer

Temperature is a primary measurement used in studying the atmosphere. A *thermometer* is a device that is used to measure temperature. A thermometer works due to a physical change in a material as a function of temperature and a means of converting the physical change into a temperature.

A common type of thermometer is a *bulb thermometer* that contains a reservoir of a liquid material (commonly mercury or alcohol) at the probe end that expands/contracts as a function of temperature. With increasing temperature, the fluid expands into an evacuated and calibrated tube.

Materials

- Rubbing Alcohol
- Water
- Jar or bottle (bottles with a narrow neck work best)
- Straw (clear)
- Modeling clay
- Food coloring



Directions

1. If using a jar with a lid, make a hole in the lid just large enough for the straw to fit through.
2. Pour equal amounts of cold water and rubbing alcohol until the jar is about half full.
3. Add several drops of food coloring to the jar.
4. Place the lid on the jar and put the straw through the hole into the liquid until it is just above the bottom of the jar.
5. Seal the top of the jar with modeling clay around the hole so that the straw is held in place. If using a bottle without a lid, insert the straw and seal the opening with modeling clay so that the clay holds the straw in place.
6. Put the jar/bottle in a pan of hot water. What do you observe?
7. Put the jar/bottle in a pan of ice water. What do you observe?