

The Power of Air

Purpose:

To demonstrate the power of Air Pressure

Materials:

Empty soda can
Water
Burner
Tongs or potholders
Bowl of ice water

Procedure:

1. Pour about 5 ml of water into the soda can
2. Put on burner. Heat until steam comes out of the can.
3. Grab can with potholders or tongs, flip it upside down and immediately submerge in ice water

Results:

The can implodes.

What's Really Happening:

Two forces are in play here. First of all, air is pushing down on all things at about 14 pounds per square inch, including inside and outside the can.

Heat inside the can is causing the water molecules to move faster and take up more space, forcing the air inside the can out.

When you plunge the can into the ice water, you slow down the water molecules very fast. They take up less space without letting air come back into the can to take up that space again. (you eliminated access to outside air because the only opening is under water.) The air outside the can pushes with enough force to push into the empty space that was taken up by the water molecules, crushing the can as it does.

The faster you can get the water molecules to move, the more air is pushed out of the can, and the more the can will crush.

