

Dry Ice

What Do I Need?

- dry ice (ask at your grocery store check-out)
- **NOTE: Supervision is necessary!**
- utility gloves
- balloon
- funnel
- tongs
- cup with hot water
- glass jar
- dish soap



What Do I Do?

Experiment One:

1. Pick up the tongs with your gloved hand and dip the tongs into a cup of hot water.
2. After it has been in the hot water for about 20 seconds, use the tongs to pick up a piece of dry ice.
3. What do you hear?

Experiment Two:

1. Now, we are going to add dry ice to a balloon. Place the opening of the balloon around the funnel.
2. Using your gloved hand, carefully place small pieces of dry ice into the funnel.
3. Once all the pieces have funneled into the balloon, remove the funnel and tie the balloon.
4. Let your balloon sit. What happens?

Experiment Three:

1. Our last experiment can be a little messy!
2. Add a little hot water and dish soap to a glass jar.
3. Using gloves or tongs, add dry ice to the glass jar.
4. What happens?

What's Going On?

Dry ice is frozen carbon dioxide. Its temperature is -109.3 degrees Fahrenheit (-78.5 degrees Celsius). If dry ice comes in contact with our skin, it can kill nerve endings or cause frost bite, so protect your skin with gloves.

For the first experiment, the quick change in temperature from hot water to cold dry ice made the metal contract at a fast speed to produce the vibration that caused the high-pitched resonance.

How did the balloon inflate in our second experiment? Most states of matter change from a solid to a liquid, like ice to water. Dry ice (CO_2) has a different property. It actually evaporates directly into a gaseous form in a process called sublimation. As the dry ice inside the balloon sublimated, the CO_2 gas that was released actually inflated the balloon.

Sublimation also occurred in our last experiment with the dish soap. As the dry ice sublimated, the CO_2 gas became trapped in the soap to form the bubbles.