# Vinegar Bomb!

Mixing chemicals in chemistry can create new things. Things like medicine, better foods or stronger metals. Sometimes however mixing chemicals creates a magnificent bang! The Vinegar grenade experiment is a fun but messy experiment that will create a magnificent bang - don't worry it's safe once you wear your safety goggles.

**What's happening?**

When the vinegar and the baking soda (sodium bicarbonate) mix together they react and give off carbon dioxide gas. The gas builds up in the film canister and pushes down with such force it causes the canister to be forced upwards and the lid to be pushed off - just like a real rocket!

**Instructions**

1. Safety first - make sure to put on your safety goggles and wear old clothes or a lab coat. This experiment should be done outside as it can be messy.
2. Choose a bottle cap that fits just inside the film canister and will slide down into the canister without turning over.
3. Pour vinegar into the film canister filling it to 1/4 full.
4. Fill the bottle cap with baking powder. Facing the bottle cap upwards, slide the bottle cap filled with baking soda into the film canister.
5. Make sure to position your body away from the film canister when you are doing the next steps - do not hover over the film canister.
6. Put the lid on the film canister carefully making sure not to shake it while closing it. (Do not let the vinegar or baking powder mix, yet)
7. When you are ready very quickly turn the film canister upside down - placing the lid side of the canister down on the table and step back quickly.
8. Watch the pop and hear the bang!

**What is needed:**

Empty film canister
Vinegar
Baking soda
Bottle cap
Safety goggles

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# Motor Madness

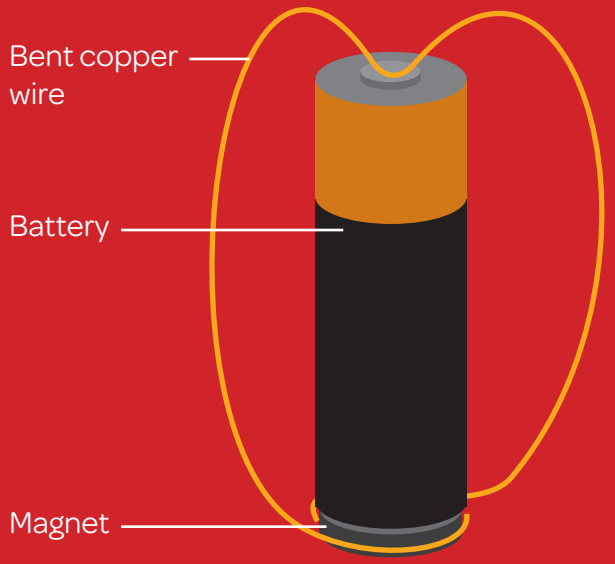
The wonder of science is that sometimes it appears like magic - making things move, causing forces or creating bangs and explosions. The 'Motor Madness' experiment uses some every day objects to create a magnificent motor.

**What is happening?**

When the copper wire touches the side of the magnet an electric circuit is completed causing current to flow from the battery and through the wire. When the electric current in the wire passes through the magnetic field of the magnet this causes a force that is perpendicular to both the direction of movement and the magnetic field and so the motor begins to spin.

**Instructions**

1. Place the negative (-) side of the battery on top of the neodymium magnet.
2. Bend the copper wire (non-insulated / covered) into shape so it will touch both the positive side of the battery but will also go around the circumference of the magnet (see diagram)
3. Balance and bend the wire so it will spin freely and easily.
4. Now, watch your motor go!




**What is needed:**

AA battery

Neodynium magnet

Copper wire

**Watch a video**

http://www.youtube.com/watch?v=-jP9RkyUTnw

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