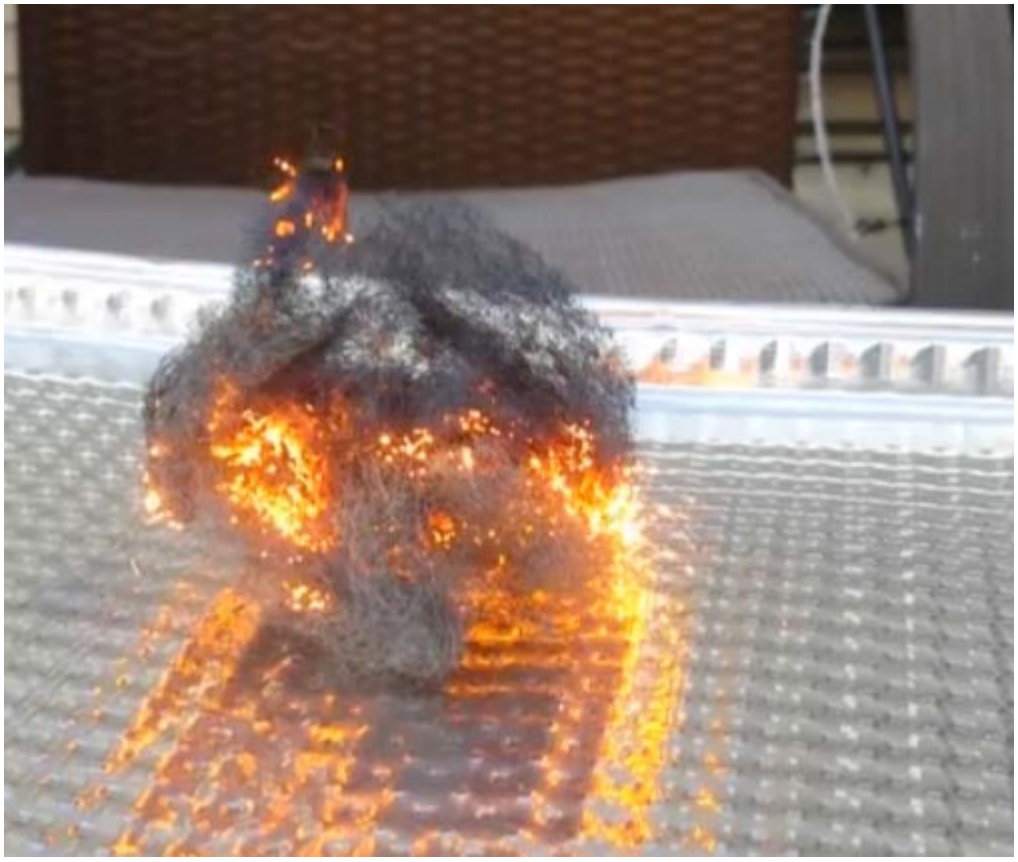
STEEL WOOL AND 9 VOLT BATTERY EXPERIMENT

ADULT SUPERVISION REQUIRED



THE EXPERIMENT

This steel wool and 9 volt battery experiment is a fun, easy way for middle and high school students to learn about electricity, physics, and chemistry. It only requires 3 materials and some adult supervision.

MATERIALS

– Fine Steel Wool (We used 0000)
– 9 volt battery
– Baking pan (We used a disposable aluminum pan)

PROCEDURE

1) Pull the steel wool apart into thin strips and then form a loose ball.

2) Place the steel wool in the baking pan.

3) Touch the ends of the battery to the steel wool.

WHAT HAPPENED?

Steel wool is made mostly of iron (about 98%). These iron threads have lots of surface area surrounded by pockets of oxygen.

When both battery terminals touch the steel wool, the electrons from the battery move rapidly through the steel wool and make a complete circuit. The electrical current heats up the wire (700 degrees) and this heat causes the iron to react with the oxygen surrounding the steel wool. This reaction creates the spark that we see and the release of heat that heats up the next iron molecules, thus causing chain reactions through the steel wool.

This reaction of iron and oxygen, also, creates a new substance, iron oxide (FeO_2). Iron oxide is heavier than iron, making the resulting product heavier than the original steel wool.

EXPERIMENT FURTHER

Try different gauges of steel wool to see if the reaction is different.

Blow on the steel wool while it is reacting. Does it speed up or slow down the reaction. Why?