

# Iron Sparklers

## Student Worksheet

Name \_\_\_\_\_

**Overview:** Ooh, ahh, fireworks! Nope, it's not the 4<sup>th</sup> of July. You're in chemistry class and today you'll learn some fun facts about iron filings!

**What to Learn:** You should know that surface area is very important in chemical reactions. More surface area means more room for reactions to occur.

### Materials

- Card stock
- Alcohol burner
- Iron filings ([MSDS](#))
- Gloves
- Optional: steel wool (not SOS pads, which have soap) ([MSDS](#))

### Lab Time

1. Fold an index card or piece of cardstock in half.
2. Add a small bit of iron filings into the crease. Cap the chemical and put it aside.
3. With the paper out of the way, light the alcohol burner.
4. Hold the paper close (but not close enough to catch fire!), and gently blow the filings down into the flame. Observe.
5. Return unused filings to your container. Any surface these filings touch turns gray, so keep your filings corralled. Clean your work surface with a wet paper towel.
6. Discard any unburned iron powder that is coating the area around your alcohol burner into a trash container outside. It is not toxic, but still ... don't use chemicals or experiment residue as a snack. Never a good idea.
7. Optional: Outside *in a safe area far away from anything flammable*, light a small piece of steel wool that has been fluffed up. Observe.

## Iron Sparklers Data Table

Item/Object	Detailed Observations (Size, shape, feel, shine, color, smell, etc.)
Iron Filings	

Iron Filings + Flame	
Steel Wool	
Steel Wool + Flame	

**Exercises** Answer the questions below:

1. What is the fuel in this experiment? What would happen if there was too much fuel?
2. What three things were needed in order to see a spark?
3. A scientist was doing an experiment with a large piece of metal and couldn't get the desired reaction to happen fast enough. What could she do in order to speed up the reaction? Explain your answer.
4. What chemical reaction took place in this experiment?

## Exercises

1. What is the fuel in this experiment? What would happen if there was too much fuel? (Iron filings. If there was too much, it wouldn't ignite.)
2. What three things were needed in order to see a spark? (fuel, oxygen, and a flame)
3. A scientist was doing an experiment with a large piece of metal and couldn't get the desired reaction to happen fast enough. What could she do in order to speed up the reaction? Explain your answer. (The scientist could cut up the metal in order to provide more surface area. This allows more of the metal to be exposed during the reaction.)
4. What chemical reaction took place in this experiment? (Iron + Oxygen  $\rightarrow$  Iron Oxide or  $2\text{Fe} + \text{O}_2 \rightarrow 2\text{FeO}$ )

**Closure:** Before moving on, ask your students if they have any recommendations or unanswered questions that they can work out on their own. Brainstorming extension ideas is a great way to add more science studies to your class time.