

Zinc Dust

Student Worksheet

Name _____

Overview: Who gets to burn something today? YOU get to burn something today! You will be working with zinc (Zn). Other labs allow us to burn metal, but there is a bit of a twist this time. We will be burning a powder.

What to Learn: After today, you'll understand why we are burning zinc dust instead of a big hunk of zinc (it has more surface area!). You'll also need to know what the following chemical reaction means: $2\text{Zn} + \text{O}_2 \rightarrow 2\text{ZnO}$.

Materials

- Alcohol burner
- Lighter
- Measuring spoon
- Zinc powder ([MSDS](#))
- Porcelain tile work surface

Lab Time

1. Place all materials on the porcelain work surface. Take the top off the zinc container. Be very careful, as it is a very fine powder.
2. Put some in the small end of a spoon, making sure to first break up any clumps.
3. Re-cap the zinc container and set it aside.
4. With adult help, ignite the alcohol burner.
5. Hold the spoon with zinc powder over the flame (use pliers if it makes you more comfortable).
6. Observe!
7. Once the color change has taken place, remove from flame and allow it to cool. Once cool, you may put it back into the flame again and watch the color change once again.

Cleanup: Clean everything thoroughly after you are finished with the lab. After cleaning with soap and water, rinse thoroughly. Chemists use the rule of “three” in cleaning tools. After washing, chemists rinse out all visible soap and then rinse three times more.

Storage: Place all chemicals and cleaned tools, and glassware in their respective storage places.

Disposal: Dispose of all solid waste in the garbage.

Zinc Dust Data Table

Chemical	Color and Other Observations
Zinc powder (straight from the container)	
Hot zinc oxide	
Cold zinc oxide	

Exercises Answer the questions below:

1. Why did we use zinc in powdered form? What may have happened if we burned a stick of zinc instead?
2. Explain what is happening in the following equation: $2\text{Zn} + \text{O}_2 \rightarrow 2\text{ZnO}$.
3. What does it mean if a compound is thermochromic?
4. There are two jars of zinc oxide. One is white and one is yellow. Which one would you want to put on your nose as a sunscreen? Why?

Exercises

1. Why did we use zinc in powdered form? What may have happened if we burned a stick of zinc instead? (The powdered form has more surface area. A stick of zinc may not have burned as well, or we may not have seen much of a reaction.)
2. Explain what is happening in the following equation: $2\text{Zn} + \text{O}_2 \rightarrow 2\text{ZnO}$. (Zinc combines with oxygen to produce zinc oxide).
3. What does it mean if a compound is thermochromic? (It changes colors depending on the temperature.)
4. There are two jars of zinc oxide. One is white and one is yellow. Which one would you want to put on your nose as a sunscreen? Why? (The white one! The yellow color means it is hot!)

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.