

NAME _____ PREF _____ SECTION SC _____ DATE _____

EXPERIMENT 3: FORMS OF MATTER AND CHEMICAL CHANGES

Equipment: magnet, paper, test tube, Bunsen burner, splint

Materials: powdered sulfur, iron filings, lead (IV) oxide

In this experiment, you'll learn what is meant by the terms: chemical change, element, compound, and mixture.

- A. Examine some powdered sulfur and some iron filings.
 1. Describe the appearance of each.
- B. Place a magnet near each.
 2. What effect does the magnet have?
- C. Make a mixture of iron filings and an equal volume of sulfur on a folded piece of paper.
 3. Describe the appearance of the mixture.
- D. Place a magnet near the mixture.
 4. Describe what happens.
- E. Add to the mixture a volume of sulfur equal to $1/4$ the volume of the mixture.
 5. Is there a limit to the quantity of sulfur that may be added to the mixture?
- F. Transfer the mixture to a test tube and heat strongly until a red glow appears in the tube. Remove the flame as soon as the red glow appears.
 6. What happens to the red glow inside the test tube when the flame is taken away? Explain.
 7. Define "exothermic reaction."
 8. Which had more chemical potential energy, the reactants or the product? Explain your answer.
- G. Remove the product from the test tube and examine it. Test it with a magnet.
 9. Does it resemble iron or sulfur?
 10. What must have occurred to account for the change?

SUMMARY QUESTIONS

1. What is an element?
2. What is meant by "chemical change"?
3. What is a compound?
4. What are two important differences between a mixture and a compound?
5. Write equations for both chemical changes that you observed in this experiment.
6. Draw fully labelled potential energy diagrams for the two chemical reactions you observed in this experiment.
7. What is the source of the energy given off in an exothermic reaction?
8. In what form is the energy absorbed by an endothermic reaction stored? Where is it stored?
9. Define activation energy.