

Oxygen — What a Flame!

Data Sheet

| Procedure Part # | Materials Used | Observations |
|---------------------|-------------------|--------------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |

Post-Lab Questions (Answer the following questions on a separate sheet of paper.)

Part 1. Preparation of Oxygen Gas

1. Write the balanced chemical equation for the reaction occurring in the syringe.
2. How many moles of O_2 gas can be expected if 5 mL of 6% H_2O_2 are used in the reaction? (*Hint:* Density of 6% H_2O_2 is 1.0 g/mL)
3. Referring to question #2, what volume in mL of oxygen is expected? (*Hint:* Use the Ideal Gas Law and assume $P = 1.00$ atm, $T = 298$ K, and $R = 0.0821$ L·atm/mol·K).

Part 2. Oxygen and Combustion

4. What chemical property of oxygen is illustrated in both parts of this experiment?
5. What type of reaction is occurring in both parts of this experiment?
6. What happened to the candle flame in Part B? Explain your observations.
7. What gases are replacing the oxygen in the syringe in Part B? How do you know?
8. Write the reaction between the gas produced in Part B and limewater.

Part 3. Steel Wool and Oxygen

9. Does the steel wool burn faster in the air or in pure oxygen? Explain why.
10. (a) Predict what would happen if you were to use coarse steel wool instead of the fine steel wool you used in the experiment. (b) Predict what would happen if you were to use iron powder instead of steel wool.
11. What are the two reactants in the experiment? If the product is Fe_2O_3 , write the balanced equation for the reaction.

Part 4. The Blue Bottle Experiment in a Syringe!

12. What is the purpose of shaking the syringe containing the oxygen and the Blue Bottle solution?
13. Which direction will the equilibrium position shift when oxygen gas is added to the solution in the syringe?
14. Does O_2 gas cause the solution to become blue or colorless? What type of reaction is occurring?