Honors Chemistry: Stoichiometry 4 Problem Set- Purity and Percentage Yield

1. 15.5-g of ammonium chloride reacts with an excess of silver nitrate. In the reaction 35.5-g silver chloride is produced. Ammonium nitrate is the other product. What is the percentage yield?

2. Potassium chlorate decomposes into oxygen gas and potassium chloride. In an experiment 32.5-g of potassium chlorate is decomposed and 15.2-g of potassium chloride is formed. What is the percentage yield?

3. Nitrogen gas reacts with hydrogen gas to make ammonia (NH_3). In this reaction, 15.5-L of nitrogen gas reacts at STP to make 30-L of ammonia. What is the percentage yield?

4. What is the percentage yield of oxygen gas if 54-L of the gas can be obtained from the thermal decomposition of 500.0g of potassium chlorate? The other product is potassium chloride.

5. It is desired to prepare 100.0-g of silicon tetrafluoride by adding hydrogen fluoride gas to silicon dioxide. The percentage yield of this process is 75%. How many liters of hydrogen fluoride gas do you need to react? The other product is water.

6. When black gunpowder explodes, potassium nitrate, carbon, and sulfur react with each other to form nitrogen gas, carbon dioxide gas, and solid potassium sulfide. If the original mixture contains 50.0 g of potassium nitrate and the total volume of the gases produced is 20-L, then what is the percentage yield for this process?

7. Very hot zinc will react with steam to form zinc oxide and hydrogen. In this reaction, 5.4-L of hydrogen gas was produced from 20.0 g of zinc at STP. What is the percentage yield of this process?

8. When hydrochloric acid is added to 5.73 g of contaminated calcium carbonate, 2.49 g of carbon dioxide is obtained. What is the percentage purity of the calcium carbonate?