Chemistry 11

Percent Purity

Name:
Date:
Block:

1. Consider the reaction of magnesium hydroxide with phosphoric acid:

$$\_\_\_ Mg(OH)_2 + \_\_\_ H_3PO_4 \rightarrow \_\_\_ Mg_3(PO_4)_2 + \_\_\_ H_2O$$

   Calculate the mass of $Mg(OH)_2$ needed to make 127 g of $Mg_3(PO_4)_2$. Assume the $Mg(OH)_2$ is 88.5% pure.

2. Consider the reaction:

$$\_\_\_\_KO_2 + \_\_\_\_CO_2 \rightarrow \_\_\_\_K_2CO_3 + \_\_\_\_O_2$$

a. A 30.0 g sample of KO_2 is 59.3% pure. What mass of K_2CO_3 can the sample produce?

b. Another sample of KO_2 with a mass of 150.0 g is reacted so as to produce 89.7 g of K_2CO_3. What is the percentage purity of KO_2?

3. If 72.1 g of FeO produces 12.9 g of pure Fe according to the reaction:

$$\_\_\_\_\_ FeO + \_\_\_\_\_ C + \_\_\_\_\_O_2 \rightarrow \_\_\_\_\_ Fe + \_\_\_\_\_ CO_2$$

   What is the percentage purity of the FeO used?

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Percent Yield

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4. Potassium chlorate decomposes to form potassium chloride and oxygen gas.
    a. What is the balanced reaction?

    b. When 5.95 g of potassium chlorate decomposes, 1.45 g of oxygen gas is given off. Calculate the percentage yield of oxygen.

5. When 50.0 g of iron metal is reacted with copper (II) sulfate, 43.0 g of copper metal is recovered.
    a. What is the balanced reaction?

    b. Determine the percentage yield of copper.

6. Consider the following reaction:

$$\_\_\_\ C_3H_8 + \_\_\_\ O_2 \rightarrow \_\_\_\ CO_2 + \_\_\_\ H_2O$$

32.0 g of oxygen reacts with 19.0 g of C_3H_8. The experiment gives 2.00 g H_2O. What is the % yield?

1. 95.5 g $Mg(OH)_2$ 2a. 17.3 g KO_2 2b. 61.5% KO_2 3. 23.0% FeO 4a. $2KClO_3 \rightarrow 2KCl + 3O_2$ 4b. 62.2% O_2 5a. $Fe + CuSO_4 \rightarrow Cu + FeSO_4$ 5b. 75.6% Cu 6. 13.9% H_2O