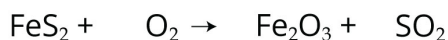


Mass to Mass Stoichiometry Problems

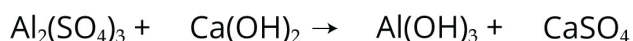
1. Complete the following unbalanced reaction and answer the given questions.



a. How many grams of iron (IV) sulfide are used when 9 g of O_2 react?

b. How much iron (III) oxide is produced when 25 g of iron (IV) sulfide are used?

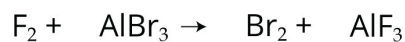
2. Balance the following reaction and answer the given questions.



a. What mass of aluminum (III) hydroxide are produced if 165.7 g of aluminum (III) sulfate react?

b. How many grams of calcium hydroxide are needed to form 6.35 g of calcium sulfate?

3. Balance the following equation and then answer the given questions:

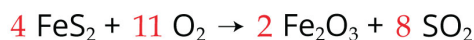


a. If 8.4 g of aluminum bromide react, how many grams of bromine are produced?

b. If 90 g of aluminum fluoride are made, how many grams of fluorine have reacted?

Mass to Mass Stoichiometry Problems

1. Complete the following unbalanced reaction and answer the given questions.



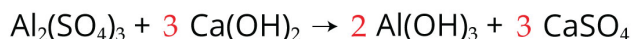
a. How many grams of iron (IV) sulfide are used when 9 g of O_2 react?

$$9 \text{ g O}_2 \times \frac{1 \text{ mol O}_2}{32 \text{ g O}_2} \times \frac{4 \text{ mol FeS}_2}{11 \text{ mol O}_2} \times \frac{120 \text{ g FeS}_2}{1 \text{ mol FeS}_2} = 12 \text{ g FeS}_2$$

b. How much iron (III) oxide is produced when 25 g of iron (IV) sulfide are used?

$$25 \text{ g FeS}_2 \times \frac{1 \text{ mol FeS}_2}{120 \text{ g FeS}_2} \times \frac{2 \text{ mol Fe}_2\text{O}_3}{4 \text{ mol FeS}_2} \times \frac{159.6 \text{ g Fe}_2\text{O}_3}{1 \text{ mol Fe}_2\text{O}_3} = 16.6 \text{ g Fe}_2\text{O}_3$$

2. Balance the following reaction and answer the given questions.



a. What mass of aluminum (III) hydroxide are produced if 165.7 g of aluminum (III) sulfate react?

$$167.5 \text{ g Al}_2(\text{SO}_4)_3 \times \frac{1 \text{ mol Al}_2(\text{SO}_4)_3}{342.3 \text{ g Al}_2(\text{SO}_4)_3} \times \frac{2 \text{ mol Al}(\text{OH})_3}{1 \text{ mol Al}_2(\text{SO}_4)_3} \times \frac{78 \text{ g Al}(\text{OH})_3}{1 \text{ mol Al}(\text{OH})_3} = 75.5 \text{ g Al}(\text{OH})_3$$

b. How many grams of calcium hydroxide are needed to form 6.35 g of calcium sulfate?

$$6.35 \text{ g CaSO}_4 \times \frac{1 \text{ mol CaSO}_4}{136.2 \text{ g CaSO}_4} \times \frac{3 \text{ mol Ca}(\text{OH})_2}{3 \text{ mol CaSO}_4} \times \frac{74.1 \text{ g Ca}(\text{OH})_2}{1 \text{ mol Ca}(\text{OH})_2} = 3.45 \text{ g Ca}(\text{OH})_2$$

3. Balance the following equation and then answer the given questions:



a. If 8.4 g of aluminum bromide react, how many grams of bromine are produced?

$$6.35 \text{ g AlBr}_3 \times \frac{1 \text{ mol AlBr}_3}{266.7 \text{ g AlBr}_3} \times \frac{3 \text{ mol Br}_2}{2 \text{ mol AlBr}_3} \times \frac{159.8 \text{ g Br}_2}{1 \text{ mol Br}_2} = 7.5 \text{ g Br}_2$$

b. If 90 g of aluminum fluoride are made, how many grams of fluorine have reacted?

$$90 \text{ g AlF}_3 \times \frac{1 \text{ mol AlF}_3}{84 \text{ g AlF}_3} \times \frac{3 \text{ mol F}_2}{2 \text{ mol AlF}_3} \times \frac{38 \text{ g F}_2}{1 \text{ mol F}_2} = 60 \text{ g F}_2$$