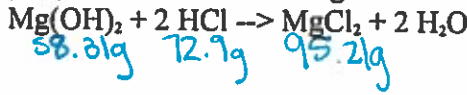


UNITS ARE IMPORTANT (g, L, moles, etc AND what substance are you referring to!)

$$\frac{\text{Mg(OH)}_2:}{58.31g} = \frac{95.21g}{50.6g}$$

1. A 50.6 g sample of Mg(OH)_2 is reacted with 45.0 g of HCl according to the reaction:



$$\frac{\text{HCl}:}{45g} = \frac{95.21g}{x}$$

$$\boxed{82.6g \text{ MgCl}_2}$$

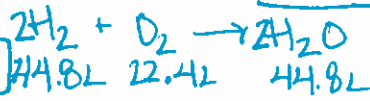
What is the theoretical yield of MgCl_2 ?
What is the limiting reactant?

$$\frac{58.31g \text{ MgCl}_2}{\text{HCl}}$$

$$\boxed{58.31g \text{ MgCl}_2}$$

$$\frac{\text{mol H}_2\text{O} = 18g}{18g} = \frac{18g}{18g}$$

2. If there is 23.4 L of Hydrogen gas at STP that reacts with 32.4L of Oxygen gas at STP, please determine the mass of water vapor that can be produced.



$$\frac{\text{H}_2:}{23.4} = \frac{44.8}{x} \quad \boxed{23.4L}$$

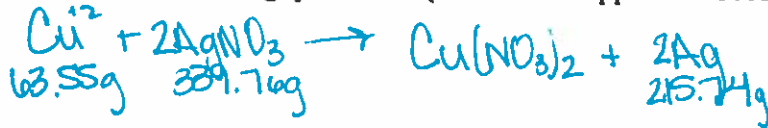
$$\frac{\text{O}_2:}{32.4} = \frac{44.8}{x} \quad \boxed{18.8g}$$

What is the theoretical yield of H_2O in grams?

bravery what we have
 $\frac{23.4L}{22.4L} = 1.04$
moles of water that can be made

$$\frac{\text{Cu}}{63.55} = \frac{215.74}{x}$$

3. If 5.00 grams of copper metal react with a solution containing 20.0 grams of AgNO_3 , please answer the following questions. (HINT: the copper will become the copper (II) ion.)

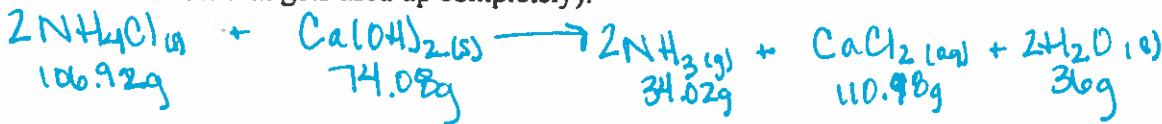


What is the limiting reactant?
What is the excess reactant?
What is the theoretical yield of silver that is formed?

$$\frac{\text{AgNO}_3}{\text{Cu} + 2} = 12.7g$$

$$\frac{\text{AgNO}_3:}{239.76g} = \frac{215.74}{20}$$

4. Heating together the solids NH_4Cl and Ca(OH)_2 can generate ammonia (NH_3), aqueous CaCl_2 , and liquid H_2O . If a mixture of 33.0 g each of NH_4Cl and Ca(OH)_2 is heated, how many grams of each product can be formed? (hint, you still need to find the LR, since we know that gets used up completely).



Mass of each product:

$$\begin{aligned} \text{NH}_3 &= 10.5g \\ \text{CaCl}_2 &= 34.3g \\ \text{H}_2\text{O} &= 11.1g \end{aligned}$$

$$\frac{\text{NH}_4\text{Cl}:}{106.92} = \frac{34.02}{33}$$

$$\frac{\text{Ca(OH)}_2:}{74.08g} = \frac{34.02}{33}$$

$$\frac{106.92}{33} = \frac{110.98}{x}$$

$$\frac{106.92}{33} = \frac{36}{x}$$

$$\boxed{10.5g \text{ NH}_3}$$

* NH_4Cl is LR!

$$34.3g \text{ CaCl}_2$$

$$11.1g \text{ H}_2\text{O}$$