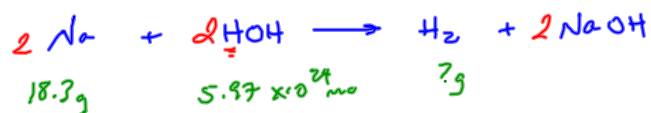


When 18.3 g of sodium are dropped into 5.97×10^{24} molecules of water, how many g of hydrogen are produced?



$$18.3 \text{ g Na} \times \frac{1 \text{ mol}}{22.98977 \text{ g}} \times \frac{1 \text{ H}_2}{2 \text{ Na}} \times \frac{2.0158 \text{ g}}{1 \text{ mol}} = 0.802 \text{ g H}_2$$

$$5.97 \times 10^{24} \text{ mo H}_2\text{O} \times \frac{1 \text{ mol}}{6.022 \times 10^{23} \text{ mo}} \times \frac{1 \text{ H}_2}{2 \text{ H}_2\text{O}} \times \frac{2.0158 \text{ g}}{1 \text{ mol}} = 9.99 \text{ g H}_2$$

Sep 4-10:23 PM

When 32.66 mL of a 2.06 M solution of phosphoric acid react with 12.06 g of barium nitrate, how many g of barium phosphate are produced? What is the limiting reagent? Which reactant is in excess? How much excess is there?



$$32.66 \text{ mL H}_3\text{PO}_4 \times \frac{2.06 \text{ mol}}{1000 \text{ mL}} \times \frac{1 \text{ Ba}_3(\text{PO}_4)_2}{2 \text{ H}_3\text{PO}_4} \times \frac{601.924 \text{ g}}{1 \text{ mol}} = 20.3 \text{ g Ba}_3(\text{PO}_4)_2$$

$$12.06 \text{ g Ba}(\text{NO}_3)_2 \times \frac{1 \text{ mol}}{261.547 \text{ g}} \times \frac{1 \text{ Ba}_3(\text{PO}_4)_2}{3 \text{ Ba}(\text{NO}_3)_2} \times \frac{601.924 \text{ g}}{1 \text{ mol}} = 9.25 \text{ g Ba}_3(\text{PO}_4)_2$$

$$9.25 \text{ g Ba}_3(\text{PO}_4)_2 \times \frac{1 \text{ mol}}{601.924 \text{ g}} \times \frac{2 \text{ H}_3\text{PO}_4}{1 \text{ Ba}_3(\text{PO}_4)_2} \times \frac{1000 \text{ mL}}{2.06 \text{ mol}} = 14.9 \text{ mL H}_3\text{PO}_4 \text{ used}$$

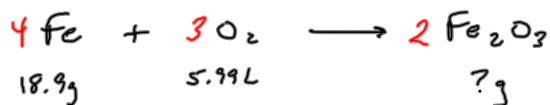
$$\left(\frac{9.25}{20.3} \right) (32.66 \text{ mL}) = \text{used}$$

$$\text{XS} = 32.66 - 14.9 =$$

$$17.8 \text{ mL XS}$$

Sep 4-10:23 PM

When 18.9 g of iron burn in 5.99L of oxygen gas (at STP), what mass of iron III oxide can be produced, what is in excess and how much excess is there?



$$18.9 \text{ g Fe} \times \frac{1 \text{ mol}}{55.845 \text{ g}} \times \frac{2 \text{ Fe}_2\text{O}_3}{4 \text{ Fe}} \times \frac{159.688 \text{ g}}{1 \text{ mol}} = 27.0 \text{ g Fe}_2\text{O}_3$$

$$5.99 \text{ L O}_2 \times \frac{1 \text{ mol}}{22.4 \text{ L}} \times \frac{2 \text{ Fe}_2\text{O}_3}{3 \text{ O}_2} \times \frac{159.688 \text{ g}}{1 \text{ mol}} = 28.5 \text{ g Fe}_2\text{O}_3$$

$$27.0 \text{ g Fe}_2\text{O}_3 \times \frac{1 \text{ mol}}{159.688 \text{ g}} \times \frac{3 \text{ O}_2}{2 \text{ Fe}_2\text{O}_3} \times \frac{22.4 \text{ L}}{1 \text{ mol}} = 5.68 \text{ L O}_2$$

$$5.99 \text{ L} \left(\frac{27.0}{28.5} \right) = 5.68 \text{ L}$$

$$5.99 - 5.68 = .31 \text{ L O}_2 \text{ excess}$$

Sep 21-9:12 AM