

Ammonium phosphate - $(\text{NH}_4)_3^+ \text{PO}_4^{3-}$

Gold (III) sulphide - $\text{Au}_2^{3+} \text{S}_3^{2-}$

Review #2 Conversions, Stoichiometry and Limiting Excess

Convert 23.2g of hydrogen gas to:

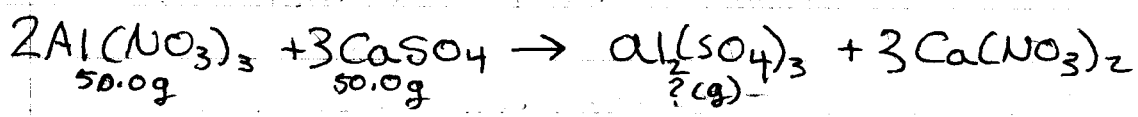
a) number of molecules

b) number of atoms

$$a) 23.2 \text{g } \text{N}_2 \times \frac{1 \text{mol } \text{N}_2}{28.02 \text{g } \text{N}_2} \times \frac{6.022 \times 10^{23} \text{ molec } \text{N}_2}{1 \text{mol } \text{N}_2} = 4.99 \times 10^{23} \text{ molec } \text{N}_2$$

$$b) \quad " \quad " \quad " \quad " \quad " \quad " \quad \times \frac{2 \text{ atoms } \text{N}}{1 \text{molec } \text{N}_2} = 9.97 \times 10^{23} \text{ atoms } \text{N}$$

For the reaction between 50.0g aluminum nitrate and 50.0g of calcium sulphate, determine the max possible mass of aluminum sulphate that could form.



$$50.0 \text{g } \text{Al}(\text{NO}_3)_3 \times \frac{1 \text{mol } \text{Al}(\text{NO}_3)_3}{213.009 \text{g } \text{Al}(\text{NO}_3)_3} \times \frac{1 \text{mol } \text{Al}_2(\text{SO}_4)_3}{2 \text{mol } \text{Al}(\text{NO}_3)_3} \times \frac{342.15 \text{g } \text{Al}_2(\text{SO}_4)_3}{1 \text{mol } \text{Al}_2(\text{SO}_4)_3}$$
$$= 40.2 \text{g } \text{Al}_2(\text{SO}_4)_3$$

limiting

$$50.0 \text{g } \text{CaSO}_4 \times \frac{1 \text{mol } \text{CaSO}_4}{136.15 \text{g } \text{CaSO}_4} \times \frac{1 \text{mol } \text{Al}_2(\text{SO}_4)_3}{3 \text{mol } \text{CaSO}_4} \times \frac{342.15 \text{g } \text{Al}_2(\text{SO}_4)_3}{1 \text{mol } \text{Al}_2(\text{SO}_4)_3}$$
$$= 41.9 \text{g } \text{Al}_2(\text{SO}_4)_3$$