

if the mineral pyrite, FeS_2 is heated strongly in air, iron oxide and sulphur dioxide are produced what mass of iron oxide and sulphur dioxide could be made by heating 1 tonne of an ore which contains 50% by mass of pyrite? $4FeS_2 + 11O_2 \rightarrow 2Fe_2O_3 + 8SO_2$

$$m(FeS_2) = 10^6 * 0.5 = 0.5 * 10^6 \text{ g}$$

$$v(FeS_2) = \frac{0.5 * 10^6}{56 + 32 + 32} = 4.2 * 10^3 \text{ mol}$$

$$v(Fe_3O_4) = 2.1 * 10^3 \text{ mol}$$

$$m(Fe_3O_4) = 2.1 * 10^3 * 232 = 487.2 * 10^3 \text{ g} = 487.2 \text{ kg}$$

$$v(SO_2) = 8.4 * 10^3 \text{ mol}$$

$$m(SO_2) = 8.4 * 10^3 * 64 = 537.6 * 10^3 \text{ g} = 537.6 \text{ kg}$$

$$m(Fe_3O_4) = 487.2 \text{ kg}$$

$$m(SO_2) = 537.6 \text{ kg}$$