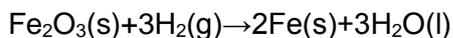


Answer on Question #55665 – Chemistry - General chemistry

Question:

For the following reaction, calculate the grams of indicated product when 16.9 g of the first reactant and 10.4 g of the second reactant is used:



Answer:

$$v = \frac{m}{M} \quad m = Mv$$

$$M(\text{Fe}_2\text{O}_3) = 159.6 \text{ g/mol}$$

$$M(\text{H}_2) = 2.0 \text{ g/mol}$$

$$v(\text{Fe}_2\text{O}_3) = \frac{16.9}{159.6} = 0.1 \text{ mol}$$

$$v(\text{H}_2) = \frac{10.4}{2.0} = 5.2 \text{ mol}$$

Fe_2O_3 is a limiting reactant in this case. So that further calculations must be done according to the Fe_2O_3 amount of moles available:

$$v(\text{Fe}) = 2 \cdot v(\text{Fe}_2\text{O}_3)$$

$$v(\text{Fe}) = 2 \cdot 0.1 = 0.2 \text{ mol}$$

$$M(\text{Fe}) = 55.8 \text{ g/mol}$$

$$m(\text{Fe}) = 0.2 \cdot 55.8 = 11.2 \text{ g}$$