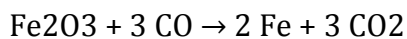


Answer on Question #62315 - Chemistry - General Chemistry

Question:

Consider the following reaction:



If 5 moles of Fe_2O_3 react with excess CO , what is the maximum amount of Fe and CO_2 that can be formed?

Solution:

- 1) As we already have the balanced equation, we can see the proportion of reagents and products. 1 mole of Fe_2O_3 gives 2 moles of Fe and 3 moles of CO_2 . So 5 moles of Fe_2O_3 will yield 10 moles of Fe and 15 moles of CO_2 .
- 2) Convert moles into mass units:
1 mole of $\text{Fe} = 55.8 \text{ g}$; 10 moles of $\text{Fe} = 55.8 \text{ g} \times 10 = 558 \text{ g}$
1 mole of $\text{CO}_2 = 12 + 2 \times 16 = 44 \text{ g}$; 15 moles of $\text{CO}_2 = 44 \text{ g} \times 15 = 660 \text{ g}$.

Answer:

The maximum amount of Fe and CO_2 that can be formed if 5 moles of Fe_2O_3 react with excess CO is: 10 moles or 558 g of Fe and 15 moles or 660 g of CO_2 .