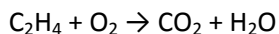


Answer on Question #40484, Chemistry, Other

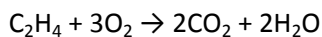
Question

Balance the following combustion reaction in order to answer the following questions. Use lowest whole-number coefficients.



You are given 7.5 moles of O_2 to react with 1.80×10^2 g C_2H_4 . Upon completion of the reaction, will there be any remaining C_2H_4 ?

Answer



Stoichiometric ratio: $n(\text{O}_2)/n(\text{C}_2\text{H}_4) = 3$.

Quantity of C_2H_4 :

$$M(\text{C}_2\text{H}_4) = 28 \text{ g/mol}$$

$$n(\text{C}_2\text{H}_4) = 1.80 \times 10^2 \text{ g} / 28 \text{ g/mol} = 6.42 \text{ mol}$$

Given ratio:

$$n(\text{O}_2)/n(\text{C}_2\text{H}_4) = 7.5/6.42 = 1.17.$$

Given ratio is lesser than the stoichiometric ratio, hence C_2H_4 is in excess (there is not enough O_2 to combust all the C_2H_4) and will remain upon completion of the reaction.