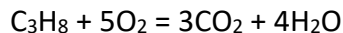


Answer on the Question #63185, Chemistry / General chemistry

If 8.22 g of propane react completely, how many grams of carbon dioxide are formed?

Solution:

The propane combustion occurs with carbon dioxide formation by the following mechanism:



That we can see from this equation that one part of propane equivalent to 3 part of carbon dioxide:

$$n(\text{CO}_2) = 3n(\text{C}_3\text{H}_8)$$

The mole number of C_3H_8 equal to:

$$n(\text{C}_3\text{H}_8) = \frac{m(\text{C}_3\text{H}_8)}{M(\text{C}_3\text{H}_8)} = \frac{8.22 \text{ g}}{44 \text{ g/mol}} = 0.19 \text{ moles}$$

This means that mole number of carbon dioxide:

$$n(\text{CO}_2) = 3 \cdot 0.19 \text{ moles} = 0.57 \text{ moles}$$

Mass of carbon dioxide can be calculated by this formula:

$$m(\text{CO}_2) = n(\text{CO}_2) \cdot M(\text{CO}_2) = 0.57 \text{ moles} \cdot 44 \frac{\text{g}}{\text{mol}} = 25.08 \text{ g}$$

Answer: the mass of carbon dioxide which forms when propane reacts completely equal to 25.08 g.