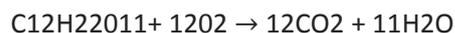


Answer on Question#40496, Chemistry, Other

Table salt, NaCl(s), and sugar, C₁₂H₂₂O₁₁(s), are accidentally mixed. A 6.00-g sample is burned, and 2.30 g of CO₂(g) is produced. What was the mass percentage of the table salt in the mixture?

Answer:

The equation of this reaction is:



If we know mass of CO₂ which is produced, we can find mass of C₁₂H₂₂O₁₁:

$$n(\text{CO}_2) = 2.30\text{g}/44 = 0.0523\text{mol}$$

$$n(\text{C}_{12}\text{H}_{22}\text{O}_{11})/n(\text{CO}_2) = 1/12$$

$$\text{So, } n(\text{C}_{12}\text{H}_{22}\text{O}_{11}) = 0.0523/12 = 0.00436\text{mol.}$$

$$\text{Then, mass of C}_{12}\text{H}_{22}\text{O}_{11} \text{ is: } 0.00436\text{mol} \times 342 = 1.49\text{g.}$$

$$\text{So, mass of NaCl is } 6.00 - 1.49 = 4.51\text{g.}$$

To find mass percentage of NaCl we can use proportion:

$$6.00\text{g} - 100\%$$

$$4.51\text{g} - x\%$$

$$\text{So, } x = (4.51 \times 100)/6.00\text{g} = 75.16\% \text{ of NaCl in the mixture.}$$