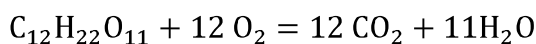


## Answer on Question #66707 - Chemistry -General Chemistry

Table salt, NaCl(s), and sugar, C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>(s), are accidentally mixed. A 4.00-g sample is burned, and 2.10 g of CO<sub>2</sub>(g) is produced. What was the mass percentage of the table salt in the mixture?

**Solution:**



$$n(\text{CO}_2) = \frac{m(\text{CO}_2)}{M(\text{CO}_2)} = \frac{2.10}{44} = 0.0477 \text{ mol}$$

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

$$n(\text{C}_{12}\text{H}_{22}\text{O}_{11}) = \frac{n(\text{CO}_2)}{12} = \frac{0.0477}{12} = 0.004 \text{ mol}$$

$$M(\text{C}_{12}\text{H}_{22}\text{O}_{11}) = 12 \cdot \text{Ar}(\text{C}) + 22 \cdot \text{Ar}(\text{H}) + 11 \cdot \text{Ar}(\text{O}) = 12 \cdot 12 + 22 + 11 \cdot 16 = 342 \text{ g/mol}$$

$$m(\text{C}_{12}\text{H}_{22}\text{O}_{11}) = n(\text{C}_{12}\text{H}_{22}\text{O}_{11}) \cdot M(\text{C}_{12}\text{H}_{22}\text{O}_{11}) = 0.004 \cdot 342 = 1.368 \text{ g}$$

$$m(\text{NaCl}) = m(\text{mixture}) - m(\text{C}_{12}\text{H}_{22}\text{O}_{11}) = 4.00 - 1.368 = 2.632 \text{ g}$$

$$w(\text{NaCl}) = \frac{m(\text{NaCl})}{m(\text{mixture})} \cdot 100 \% = \frac{2.632}{4.00} \cdot 100 \% = 65.8 \%$$

**Answer:**

65.8 %.