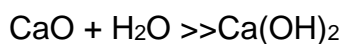


Answer on Question #55235 – Chemistry – Other

Question:

Calcium oxide reacts with water in a combination reaction to produce calcium hydroxide:



A 3.50 g sample of CaO is reacted with 3.38 g of H₂O.

Calculate how many moles of CaO and H₂O. Identify the limiting reagent. How many grams of water remain after completion of reaction?

Answer:

$$v = \frac{m}{M}$$

$$v(\text{CaO}) = v(\text{H}_2\text{O}) = v(\text{Ca(OH)}_2)$$

$$M(\text{CaO}) = 56 \text{ g/mol}$$

$$M(\text{H}_2\text{O}) = 18 \text{ g/mol}$$

$$M(\text{Ca(OH)}_2) = 74 \text{ g/mol}$$

$$v(\text{CaO}) = \frac{3.50}{56.07} = 0.06 \text{ moles}$$

$$v(\text{H}_2\text{O}) = \frac{3.38}{18.01} = 0.19 \text{ moles}$$

The limiting agent in this reaction is CaO. Its amount is less, so that it is used faster.

After the reaction the amount of water left is:

$$v(\text{H}_2\text{O})_{\text{left}} = 0.19 - 0.06 = 0.13 \text{ moles}$$