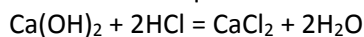


**Task:**

what mass of  $\text{Ca(OH)}_2$  is required to neutralize 50.00mL of 0.180 M HCl?

**Solution:**

The chemical equation for this reaction is



The formula for molar concentration is

$$C(\text{M}) = n(\text{mol}) / V (\text{L})$$

n- amount of the substance (mol)

V – volume of solution (L)

That's why

$$n(\text{mol}) = C(\text{M}) \cdot V(\text{L})$$

From the chemical equation

$$n(\text{Ca(OH)}_2) = n(\text{HCl}) / 2 = C(\text{HCl}) \cdot V(\text{HCl}) / 2$$

$$n(\text{Ca(OH)}_2) = 0.180 \cdot 50.00 \cdot 10^{-3} / 2 = 4.50 \cdot 10^{-3} \text{ mol}$$

The mass of  $\text{Ca(OH)}_2$  is

$$m(\text{Ca(OH)}_2) = n(\text{Ca(OH)}_2) \cdot \text{MW}(\text{Ca(OH)}_2)$$

From the periodic table of elements  $\text{MW}(\text{Ca(OH)}_2) = \text{MW}(\text{Ca}) + 2\text{MW}(\text{O}) + 2\text{MW}(\text{H}) = 40.0 + 2 \cdot 16 + 2 \cdot 1.0 = 74 \text{ g/mol}$

$$m(\text{Ca(OH)}_2) = 4.50 \cdot 10^{-3} \cdot 74 = 0.33 \text{ g}$$

**Answer:**  $m(\text{Ca(OH)}_2) = 0.33 \text{ g}$