Answer on Question #56056 - Chemistry – General chemistry
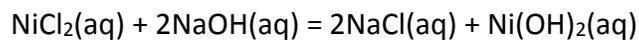
Question

What is the molarity of 30.0 mL of a $NiCl_2$ solution that reacts completely with 12.4 mL

of a 0.410 M NaOH solution?

Express your answer with the appropriate units.

Answer:

Reaction between nickel chloride and sodium hydroxide:

$$NiCl_2(aq) + 2NaOH(aq) = 2NaCl(aq) + Ni(OH)_2(aq)$$

Number of moles of NaOH:

$$n(NaOH) = CV = 0.410 \cdot 12.4 \cdot 10^{-3} = 0.005 \; mol$$

Number of moles of $NiCl_2$:

$$n(NiCl_2) = \frac{n(NaOH)}{2} = \frac{0.005}{2} = 0.0025 \; mol$$

The molarity of $NiCl_2$ solution:

$$C(NiCl_2) = \frac{n(NiCl_2)}{V} = \frac{0.0025}{30.0 \cdot 10^{-3}} = 0.083 \; M$$

Answer: 0.083 M