

Answer on Question#56578 – Chemistry – Inorganic Chemistry

Question:

A solution containing 0.275 g of NaOH require 35.5ml .of HCl for neutralization. What is the normality of HCl?

Solution:

$$m(\text{NaOH}) = 0.275 \text{ g};$$

$$V(\text{HCl}) = 35.5 \text{ ml};$$

$$N(\text{HCl}) - ?$$

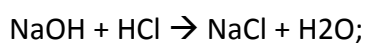
$$v = \frac{m}{M};$$

v – the number of moles NaOH (mol);

m – mass of NaOH (g);

M – molar mass of NaOH (40 g/mol);

$$v(\text{NaOH}) = 0.006875 \text{ mol};$$



According to the equation: $v(\text{NaOH}) : v(\text{HCl}) = 1:1$;

$$v(\text{NaOH}) = v(\text{HCl}) = 0.006875 \text{ mol};$$

$$N = \frac{C}{F_{\text{eq}}} = \frac{1}{F_{\text{eq}}} \frac{v}{V};$$

N – the normality or the equivalent concentration (Eq/L);

v – the number of moles (mol);

C – the molar concentration (mol/L);

V – the volume of the solution (L);

According to the reaction: $F_{\text{eq}} = 1$;

$$v(\text{HCl}) = 0.006875 \text{ mol};$$

$$V(\text{HCl}) = 0.0355 \text{ L};$$

$$N(\text{HCl}) = 0.19 \text{ Eq/L};$$

Answer: 0.19 Eq/L