

Answer on Question #66033 - Chemistry - General Chemistry

Your standardisation of the NaOH concentration gave a [NaOH] of 0.0147 M.

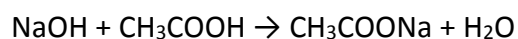
The average titre of NaOH with acetic acid for your experiment was 12.35 mL.

Final calculations:

2) Calculate the concentration of acetic acid in your dressing using $n=cv$ and then $c_1v_1=c_2v_2$ (10.0 mL of dressing was diluted to 100 mL)?

Solution:

The chemical reaction between sodium hydroxide and acetic acid is



At the equivalent point the number of moles of NaOH equals the number of moles of acetic acid. It means that:

$n(\text{NaOH}) = n(\text{CH}_3\text{COOH})$, where n is number of moles.

We know that molar concentration $C = \frac{n}{V}$. So $n = C \cdot V$.

Using last formulae:

$$C(\text{NaOH}) \cdot V(\text{NaOH}) = C(\text{CH}_3\text{COOH}) \cdot V(\text{CH}_3\text{COOH})$$

We can calculate the concentration of acetic acid using previous proportion:

$$C(\text{CH}_3\text{COOH}) = \frac{C(\text{NaOH}) \cdot V(\text{NaOH})}{V(\text{CH}_3\text{COOH})}$$

According to our experimental data:

$$C(\text{CH}_3\text{COOH}) = \frac{0.0147 \cdot 12.35}{10.0} = 0.0182 \text{ (mol/l)}$$

Answer: $C(\text{CH}_3\text{COOH}) = 0.0182 \text{ (mol/l)}$.

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