

Answer on Question #70901, Chemistry / General Chemistry :

What is the concentration (in molarity) of a 25.0 mL CH_3COOH solution that requires 30.50 mL of the NaOH solution?

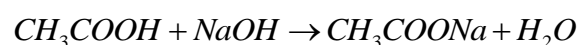
Solution.

$$V(\text{CH}_3\text{COOH}) = 25.0\text{ml}$$

$$V(\text{NaOH}) = 30.50\text{ml}$$

$$C(\text{NaOH}) = 1\text{M}$$

$$C(\text{CH}_3\text{COOH}) = ?$$



We use the law of equivalents:

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

And:

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

And:

$$C(\text{CH}_3\text{COOH}) = \frac{1\text{M} \cdot 30.50\text{ml}}{25.0\text{ml}}$$

$$C(\text{CH}_3\text{COOH}) = 1.22\text{M}$$

Answer: $C(\text{CH}_3\text{COOH}) = 1.22\text{M}$.

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