

# Standardizing a solution of potassium hydroxide essay sample



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Abstract: In this lab, a prepared solution of Potassium Hydroxide will be standardized. The solution we will be standardized by performing multiple calculations to ensure the utmost accuracy. The acid used for this titration will be KHP ( $C_4H_5KO_4$ ). Phenolphthalein will be added to the beaker of the dissolved acid before the titration will be added. The titration will stop when the solution turns pink and the color doesn't go away. Procedure: The procedure is stated in my notebook

Data/Observations:

Observations of all trials|

\* The solid KHP dissolved in distilled water \* The Solution turned stayed pink after enough KOH was added to the dissolved KHP.|

Trial 1: 1. 5316g KHP

50. 000 mL KOH in burette

28. 000 mL KOH in beaker

Trial 2: 1. 5408g KHP

50. 000mL KOH in burette

31. 500mL KOH in beaker

Trial 3: 1. 5380g KHP

50. 000mL KOH in burette

31. 500mL KOH in beaker

Analysis:

$0.025L \times .300M = .0075mol$  KOH

KHP ( $C_8H_5KO_4$ ) molar mass:  $(12.0101 \times 8) + (1.00794 \times 5) + (39.0983) + (15.9994 \times 4) = 204.2156g$   
 $.0075mol$  KOH  $\times 1mol$  KHP  $1mol$  KOH  $\times 204.$

<https://assignbuster.com/standardizing-a-solution-of-potassium-hydroxide-essay-sample/>

$2156 \text{g KHP} / 204.2156 \text{g/mol KHP} = 1.05316 \text{g KHP for solid} / 204.2156 \text{g/mol KHP} = 7.500 \times 10^{-3} \text{moles}$

$7.500 \times 10^{-3} \text{moles} / 0.2800 \text{L} = 0.26787 \text{M}$

$1.5408 \text{g} / 204.2156 \text{g/mol} = 7.545 \times 10^{-3} \text{moles}$

$7.545 \times 10^{-3} \text{moles} / 0.3150 \text{L} = 0.23954 \text{M}$

$1.538 \text{g} / 204.2156 \text{g/mol} = 7.532 \times 10^{-3} / 0.3150$

$\text{L} = 0.23910 \text{M} / 0.26787 + 0.23954 + 0.23910 = 0.74651 / 3 = 0.24884 \text{M}$

KOH

Trial 1: 0.26787 M

Trial 2: 0.23954 M

Trial 3: 0.23910 M

Accepted value: 0.24884 M

Percent yield:  $0.24884 / 0.2583 \times 100\% = 96.33\%$

Percent error:  $0.24884 - 0.2583 / 0.2583 \times 100\% = 3.662\%$  Conclusion: In this experiment, a solution of KOH was standardized with titration. The KOH reacted with KHP which was dissolved in distilled water before titration.

Phenolphthalein was added to the KHP solution as an indicator of the nature of the solution (acidic or basic). After all three trials the accepted value of the molarity of KOH was 0.24884 M. The percent error was 3.662% where the class accepted value was used as the theoretical value and the group value was used as the actual. The measurement of milliliters limited the amount of sig figs since the burette could only measure to the thousands place. Precision could have been improved by using a burette with more graduations on it. If overtitration had occurred, the molarity of the KOH in

the solution since more molecules of KOH would be added to the solution and thus affecting the molarity.