

The Kinetics of the Saponification of Ethylacetate

Name(s) _____

If you used Logger Pro for the curve fitting, just attach your printouts of the final plots and list the rate constants in the Activation Energy Section, below.

If you used Excel, just copy a few of the data points so that I can check your calculations.

Choose data over the entire time course. For the curve fit results, give the slopes and uncertainties using all of the data points, not just the ones listed in the table below.

First Run - Isolation Method:

$k_0 =$ _____ $k_\infty =$ _____
 Concentration of ethylacetate, $[ethylacetate] =$ _____ units _____

t (s)	κ	$\frac{\kappa_0 - \kappa}{\kappa_0 - \kappa_\infty}$	1 - ξ/[A] ₀	ln(1 - ξ/[A] ₀)	$\frac{1}{(1 - \xi/[A]_0)}$

slope _____ ± _____ units _____ (with all data points)

Second Run – Comparable Concentrations:

$k_0 =$ _____ $k_\infty =$ _____
 $[ethylacetate] =$ _____ units _____ $[OH^-] =$ _____ units _____

t (s)	κ	$\frac{\kappa_0 - \kappa}{\kappa_0 - \kappa_\infty}$	1 - ξ/[A] ₀	ln(1 - ξ/[A] ₀)	$\frac{1}{(1 - \xi/[A]_0)}$	$\frac{1}{[B]_0 - [A]_0} \ln \left(\frac{[B]_0/[A]_0 - \xi/[A]_0}{1 - \xi/[A]_0} \right)$

slope _____ ± _____ units _____ (with all data points)

Activation Energy and Pre-exponential Factor:

T₁ _____ k(T₁) _____ ± _____ units _____

T₂ _____ k(T₂) _____ ± _____ units _____

E_a _____ ± _____ units _____ A _____ ± _____ units _____