

#Jenny



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Cool! I'am really happy

#Markus Jensen



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My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler



so many fake sites. this is the first one which worked! Many thanks

1. For the iodine clock reaction done in lab the following data is obtained:

$$S_2O_8^{2-}(aq) + 2I^- \rightarrow 2SO_4^{2-}(aq) + I_2$$

Rate information for 25.0°C is given in the table below:

Exp.	[I ⁻]	[I ⁻]	[S ₂ O ₈ ²⁻]	Rate(M/s)
1	0.10	0.100	0.100	2.4 × 10 ⁻³
2	0.100	0.050	0.100	1.2 × 10 ⁻³
3	0.100	0.100	0.100	2.4 × 10 ⁻³
4	0.100	0.100	0.050	1.2 × 10 ⁻³
5	0.050	0.100	0.025	0.6 × 10 ⁻³

1. Determine the order with respect to each reactant.

Rate = $k [I^-]^2 [S_2O_8^{2-}]$

2. Determine the value of the rate constant at this temperature.

Rate = $2.4 \times 10^{-3} = k (0.10)^2 (0.10)$
 $k = \frac{2.4 \times 10^{-3}}{(0.10)^3} = 2.4 \times 10^{-1}$

3. Determine the rate of the 5th experiment.

$R_5 = k (0.050)^2 (0.025)$

4. Experiment # 1 is repeated at 29.0°C and the rate doubles. What is the energy of activation for this reaction? (lnk₂/k₁) = (E_a/R)(1/T₁ - 1/T₂) R=8.31 J/mol K

$\ln \frac{k_2}{k_1} = \frac{E_a}{R} \left(\frac{1}{T_1} - \frac{1}{T_2} \right)$
 $\ln \frac{2.4 \times 10^{-3}}{1.2 \times 10^{-3}} = \frac{E_a}{8.31} \left(\frac{1}{298} - \frac{1}{303} \right)$
 $E_a = 159000 \text{ J/mol} = 159 \text{ kJ/mol}$

5. I⁻ has a significant impact on the rate and yet does not appear in the overall reaction. What is I⁻ in the reaction? Explain.

① $H^+ + I^- \rightarrow HI$ $rate = k_1 [H^+][I^-]$
 ② $HI + I^- \rightarrow H_2I^{2-}$ $rate = k_2 [HI][I^-]$
 ③ $H^+ + 2O_8^{2-} \rightarrow H_2O_8^{2-} + 2SO_4^{2-}$ $rate = k_3 [H^+][O_8^{2-}]^2$

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The Rate Of An Iodine Clock Reaction Lab Answers