

Solubility Product Constants Worksheet

As you work through the steps in the lab procedure, record your experimental values and the results on this worksheet. Use the exact values you record for your data to make later calculations.

Complete the following table.

Data Table A. Absorbances of Standard Cu^{2+} Solutions

standard Cu^{2+} solutions	absorbance at ~600 nm (enter to the 0.001)
1: $5.0 \times 10^{-4} \text{ Cu(NO}_3)_2$	
2: $1.0 \times 10^{-3} \text{ Cu(NO}_3)_2$	
3: $5.0 \times 10^{-3} \text{ Cu(NO}_3)_2$	
4: $1.0 \times 10^{-2} \text{ Cu(NO}_3)_2$	

Enter the equation of trendline (Enter each answer to three significant figures.)

$$y = \text{_____} x + \text{_____} \quad R^2 = \text{_____}$$

Complete the following table.

Data Table B. Absorbances of Solutions Saturated with $\text{Cu}(\text{IO}_3)_2$

$\text{Cu}(\text{IO}_3)_2$ saturated solutions	absorbance at ~600 nm (enter to the 0.001)	$[\text{Cu}^{2+}]$ (enter to three significant figures)	$[\text{IO}_3^-]$ (enter to three significant figures)
A: $1.0 \times 10^{-2} \text{ M KIO}_3$		<i>M</i>	<i>M</i>
B: $5.0 \times 10^{-3} \text{ M KIO}_3$		<i>M</i>	<i>M</i>
C: deionized water		<i>M</i>	<i>M</i>
D: $1.0 \times 10^{-3} \text{ M Cu}(\text{NO}_3)_2$		<i>M</i>	<i>M</i>
E: $5.0 \times 10^{-3} \text{ M Cu}(\text{NO}_3)_2$		<i>M</i>	<i>M</i>

Complete the following table.

Data Table C. Calculated K_{sp} and Solubilities of $\text{Cu}(\text{IO}_3)_2$

$\text{Cu}(\text{IO}_3)_2$ saturated solutions	calculated K_{sp} (enter to three significant figures)	calculated solubility (enter to three significant figures)
A: $1.0 \times 10^{-2} \text{ M KIO}_3$		<i>M</i>
B: $5.0 \times 10^{-3} \text{ M KIO}_3$		<i>M</i>
C: deionized water		<i>M</i>
D: $1.0 \times 10^{-3} \text{ M Cu}(\text{NO}_3)_2$		<i>M</i>
E: $5.0 \times 10^{-3} \text{ M Cu}(\text{NO}_3)_2$		<i>M</i>
average		-----

The literature value for the K_{sp} of $\text{Cu}(\text{IO}_3)_2$ is 6.85×10^{-8} . How does this compare to your experimental results and your average? What is the percent difference compared to your average?

$$\text{Percent Difference} = ((\text{Experimental} - \text{Theoretical}) \cdot 100) / \text{Theoretical}$$

Looking at your solubility results for solution A as compared to C, did the solubility increase, decrease or stay the same in the solutions that originally contained IO_3^- ions?

Does this confirm the common ion effect?

Looking at your solubility results for solution B as compared to C, did the solubility increase, decrease or stay the same in the solutions that originally contained IO_3^- ions?

Does this confirm the common ion effect?

Looking at your solubility results for solution D as compared to C, did the solubility increase, decrease or stay the same in the solutions that originally contained Cu^{2+} ions?

Does this confirm the common ion effect?

Looking at your solubility results for solution E as compared to C, did the solubility increase, decrease or stay the same in the solutions that originally contained Cu^{2+} ions?

Does this confirm the common ion effect?