



7. A Lewis electron-dot diagram of the oxalate ion, $\text{C}_2\text{O}_4^{2-}$, is shown.

a) Identify the hybridization of the valence orbitals of either carbon atom in the oxalate ion.

b) Silver oxalate, $\text{Ag}_2\text{C}_2\text{O}_4(s)$, is slightly soluble in water. The value of K_{sp} for $\text{Ag}_2\text{C}_2\text{O}_4$ is 5.40×10^{-12} .

(i) Write the expression for the solubility-product constant, K_{sp} , for $\text{Ag}_2\text{C}_2\text{O}_4$.

(ii) Calculate the molar solubility of $\text{Ag}_2\text{C}_2\text{O}_4$ in neutral distilled water.

(iii) The molar solubility of $\text{Ag}_2\text{C}_2\text{O}_4$ increases when it is dissolved in $0.5\text{ M HClO}_{4(aq)}$ instead of neutral distilled water. Write a balanced, net-ionic equation for the process that occurs between species in solution that contributes to the increased solubility of $\text{Ag}_2\text{C}_2\text{O}_{4(aq)}$ in $\text{HClO}_{4(aq)}$.