

K_{sp} Problem Set

This problem set was developed by [S.E. Van Bramer](#) for [Chemistry 146](#) at [Widener University](#).

- Calculate the molar solubility and K_{sp} for each of the following.
 - 6.11×10^{-4} g BaSO₄ dissolves in 250.0 mL of water at 25 °C
 - 0.3295 g BaF₂ dissolves in 250.0 mL of water at 25 °C
 - 4.807×10^{-4} g AgCl dissolves in 250.0 mL of water at 25 °C
 - 1.667 g CaF₂ dissolves in 100.0 L of water at 25 °C
- Use the K_{sp} values calculated above to determine the mass of each that will dissolve in 2.0 L of deionized water.
 - BaSO₄
 - BaF₂
 - AgCl
 - CaF₂
- Use the K_{sp} values calculated above to determine.
 - The mass of BaSO₄ that will dissolve in 500 mL of 0.10 M sodium sulfate.
 - The mass of BaF₂ that will dissolve in 250 mL of 0.10 M potassium fluoride.
 - The mass of AgCl that will dissolve in 5.0 L of 10^{-4} M lithium chloride.
 - The mass of CaF₂ that will dissolve in 5000.0 L of 0.10 M potassium fluoride.
- Use the K_{sp} values calculated in the previous problem set to determine the mass of precipitate formed and the concentration all ions remaining in solution when:
 - 50.0 mL of 0.10 M barium acetate is mixed with 100.0 mL of 0.10 M sodium sulfate.
 - 100.0 mL of 0.15 M barium chlorate is mixed with 250.0 mL of 0.10 M potassium fluoride.
 - 75.0 mL of 0.015 M silver nitrate is mixed with 1.0 L of 10^{-4} M lithium chloride.
 - 100 L of 0.50 M calcium chloride is mixed with 5000.0 L of 0.10 M potassium fluoride.