

Chem12 Precipitates : W.S.-100

1) The K_{sp} of a certain compound is 4.6×10^{-7} . A trial K_{sp} of 8.1×10^{-8} is calculated for a solution of its ions.

a) Will a precipitate form ?

b) In order to achieve solubility equilibrium or saturation, are more or fewer ions required ?

2) 15.0 mL of 0.100 M CaI_2 is added to 30.0 mL of 0.0100 M $\text{Pb}(\text{NO}_3)_2$.

a) Calculate the concentration of all ions immediately after mixing but just before the precipitate forms.

b) What compound may precipitate ?

c) Calculate a trial K_{sp} and state whether or not a precipitate will form. ($K_{sp} = 8.5 \times 10^{-9}$ for the precipitate)

3) Will a precipitate form if 20.0 mL of 1.0×10^{-4} M NaCl are added to 20.0 mL of 2.0×10^{-6} M AgNO_3 ? Explain. ($K_{sp} = 1.8 \times 10^{-10}$ for AgCl)

Answers: 1)a) no, b) more, 2)a) $[\text{Ca}^{2+}] = 0.0333$ M, $[\text{I}^-] = 0.0667$ M, $[\text{Pb}^{2+}] = 0.00667$ M, $[\text{NO}_3^-] = 0.0133$ M, b) PbI_2 , c) $K_{sp}(\text{trial}) = 3.0 \times 10^{-5}$, a precipitate will form, 3) No, trial $K_{sp} = 5.0 \times 10^{-11} < 1.8 \times 10^{-10}$.