

Problem Set # 4

From Solubility to K_{sp}

The K_{sp} is a measure of the *solubility* of an ionic salt. The larger the value of the K_{sp} , the greater the solubility of the salt (*if you are comparing ionic salts with the same number of aqueous ions!*)

You can only calculate a K_{sp} if the solution is saturated. Only saturated salt solutions are in equilibrium. You can calculate the K_{sp} from the solubility of a salt, since the solubility represents the concentration required to saturate a solution.

1. Calculate the K_{sp} for CaCl_2 if 2.00×10^2 g of CaCl_2 is required to saturate 100.0 mL of solution.
2. Calculate the K_{sp} for AlCl_3 if 100.0 g is required to saturate 150.0 mL of a solution.
3. The solubility of SrF_2 is 2.83×10^{-5} M. Calculate the K_{sp} .
4. The solubility of GaBr_3 is 15.8 g per 100.0 mL. Calculate the K_{sp} .
5. The solubility of Ag_2SO_4 is 1.33×10^{-7} g per 100.0 mL. Calculate the K_{sp} .
6. If 2.9×10^{-3} g of $\text{Ca}(\text{OH})_2$ is needed to saturate 250.0 mL of solution, what is the K_{sp} ?