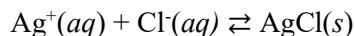


Introduction to  $K_{sp}$ 

Net ionic reaction for formation of  $\text{AgCl}(s)$



The resulting equilibrium expression would be:

$$K_c = \frac{1}{[\text{Ag}^+][\text{Cl}^-]}$$

Solid concentrations  $[\text{AgCl}(s)]$  do not change, so they are never included in equilibrium expressions or constants.

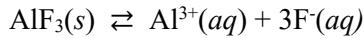
Written this way all solubility equilibrium expressions would therefore all be fractions of 1. For simplicity the solubility reactions for equilibrium are written as:



In this form all solubility equilibrium expressions are written as products and the  $K_{sp}$  is called the solubility product constant.

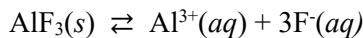
$$K_{sp} = [\text{Ag}^+][\text{Cl}^-]$$

Note that coefficients of the balanced reaction will show up as exponents in the solubility product expression as in any equilibrium expression.



$$K_{sp} = [\text{Al}^{3+}][\text{F}^-]^3$$

Note! When using molar solubility,  $s$ , the molar concentration of the  $\text{AlF}_3$ , you will also need the coefficients of the balanced rxn to get the correct concentrations of the dissolved ions.



$$K_{sp} = [s][3s]^3$$

$$K_{sp} = [27s]^4$$