+ WS 10.1 Solubility Product

K_{sp} is called the solubility product constant. It is the product of the concentrations of a substances' ions in a saturated solution, each raised to the power of the coefficient.

$$CaF_{2(s)} \rightleftharpoons Ca^{+2}{}_{(aq)} + 2\,F^{-}{}_{(aq)}$$

$$K_{sp} = [Ca^{+2}]\,[F^{-}]^2$$

Remember, pure solids and liquids are not included in equilibrum expressions.

The numerical value for K_{sp} can be determined from solubility data **(see reference chart)**.

Calculate the value for K_{sp} for the following:

1. $Mg(OH)_2$ at 100 ˚C

2. $AgC_2H_3O_2$ at 0 ˚C

3. $PbCl_2$ at 0 ˚C

4. $PbCl_2$ at 20˚C

K_{sp} values can be looked up in charts **(see reference chart)** and be used ot determine solubility data.

Calculate the solubility of each salt @ 25 ˚C, in g/L:

5. $BaCO_3$

6. ZnS

7. Ag_2S

8. $Fe(OH)_2$

Ans (IRO+2): 0.014, 1.9E-3, 1.9E-4, 5.2E-4, 1.4E-5, 4.6E-5, 5.6E-5, 2.5E-8, 1.3E-9, 8.4E-9, 1.3E-10, 3.2E-10, 6.2E-15