

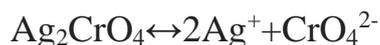
Question #57945, Chemistry / Other

Calculate the K_{sp} of Ag_2CrO_4 . Make sure your K_{sp} has the correct number of significant digits.

Solution

According to [1], solubility of argentums chromate at $25^{\circ}C$ is equal $0.035g/L$ H_2O .

Argentums chromate dissociates according to the following equation:



$$K_{sp} = [Ag^+]^2 * [CrO_4^{2-}]$$

Calculate the concentration of argentums chromate in saturated solution:

$$C(Ag_2CrO_4) = \frac{S(Ag_2CrO_4)}{M(Ag_2CrO_4)} = \frac{0.035 \text{ g/L}}{331.73 \text{ g/mol}} = 1.055 * 10^{-4} \text{ mol/L}$$

According to the dissociation equation:

$$[Ag^+] = 2 * C(Ag_2CrO_4) = 2.110 * 10^{-4} \text{ mol/L}$$

$$[CrO_4^{2-}] = C(Ag_2CrO_4) = 1.055 * 10^{-4} \text{ mol/L}$$

$$K_{sp} = (2.110 * 10^{-4})^2 * 1.055 * 10^{-4} = 4.698 * 10^{-12}$$

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