

SS 2s

3. Diketahui : kelarutan PbI_2 ($M_r = 461$) = 922 mg/L

Ditanya : $K_{sp} \text{PbI}_2$

Penyelesaian :

$$\begin{aligned}\text{Kelarutan PbI}_2 \text{ dalam mol/L} &= \frac{\text{massa}}{M_r} \\ &= \frac{922 \times 10^{-3} \text{ gram/L}}{461 \text{ gram/mol}} \\ &= 2 \times 10^{-3} \text{ mol/L}\end{aligned}$$



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$$K_{sp} = [\text{Pb}^{2+}] [\text{I}^{-}]^2$$

$$= (s) (2s)^2$$

$$= 4s^3$$

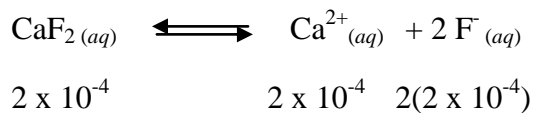
$$= 4 (2 \times 10^{-3})^3$$

$$= 3,2 \times 10^{-8}$$

4. Diketahui : konsentrasi Ca^{2+} dalam CaF_2 = 2×10^{-4} mol/L

Ditanya : $K_{sp} \text{CaF}_2$

Penyelesaian :



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

$$= (2 \times 10^{-4}) (2 \times 2 \times 10^{-4})^2$$

$$= 3,2 \times 10^{-12}$$

5. Diketahui : $K_{sp} \text{AgCl} = 10^{-10}$

$$K_{sp} \text{AgI} = 10^{-16}$$

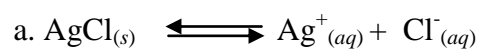
$$K_{sp} \text{Ag}_2\text{CrO}_4 = 3,2 \times 10^{-12}$$

$$K_{sp} \text{Ag}_2\text{S} = 1,6 \times 10^{-11}$$

$$K_{sp} \text{Ag}_2\text{C}_2\text{O}_4 = 1,1 \times 10^{-11}$$

Ditanya : garam yang memiliki kelarutan paling besar?

Penyelesaian :



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$$s = \sqrt{K_{sp}}$$

$$s = \sqrt{10^{-10}}$$

$$s = 10^{-5}$$

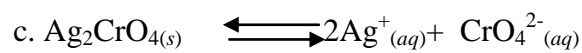


SSS

$$s = \sqrt{K_{sp}}$$

$$s = \sqrt{10^{-16}}$$

$$s = 10^{-8}$$



s 2s s

$$K_{sp} = [\text{Ag}^+]^2 [\text{CrO}_4^{2-}]$$

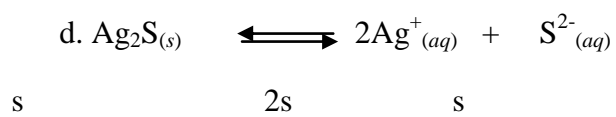
$$= (2s)^2 (s)$$

$$= 4s^3$$

$$s = \sqrt[3]{\frac{K_{sp}}{4}}$$

$$s = \sqrt[3]{\frac{3,2 \times 10^{-12}}{4}}$$

$$s = 9,2 \cdot 10^{-5}$$



$$K_{sp} = [\text{Ag}^+]^2 [\text{S}^{2-}]$$

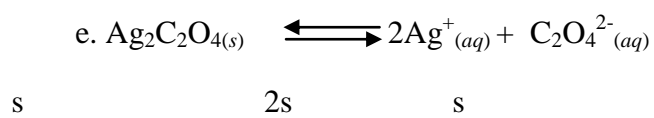
$$= (2s)^2 (s)$$

$$= 4s^3$$

$$s = \sqrt[3]{\frac{K_{sp}}{4}}$$

$$s = \sqrt[3]{\frac{1,6 \times 10^{-11}}{4}}$$

$$s = 1,58 \cdot 10^{-4}$$



$$K_{sp} = [\text{Ag}^+]^2 [\text{C}_2\text{O}_4^{2-}]$$

$$= (2s)^2 (s)$$

$$= 4s^3$$

$$s = \sqrt[3]{\frac{K_{sp}}{4}}$$

$$s = \sqrt[3]{\frac{1,1 \times 10^{-11}}{4}}$$

$$s = 1,4 \cdot 10^{-4}$$

Garam yang memiliki kelarutan paling besar adalah garam Ag_2S

6. Diketahui : $K_{sp} \text{AgN}_3 = K_{sp} \text{Pb}(\text{N}_3)_2 = K_{sp} \text{Sr}(\text{F}_2)$ pada suhu yang sama

Ditanya : Perbandingan nilai s AgN_3 , $\text{Pb}(\text{N}_3)_2$, dan $\text{Sr}(\text{F}_2)$ pada suhu yang sama

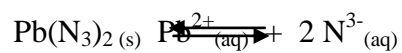
Penyelesaian :



$$K_{sp} \text{AgN}_3 = [\text{Ag}^+][\text{N}_3^-]$$

$$= s \times s$$

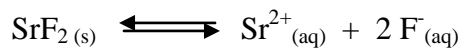
$$= s^2$$



$$K_{sp} \text{Pb}(\text{N}_3)_2 = [\text{Pb}^{2+}][\text{N}_3^-]^2$$

$$= (s) (2s)^2$$

$$= 4s^3$$



$$\begin{aligned} K_{sp} \text{ SrF}_2 &= [\text{Sr}^{2+}][\text{F}^{-}]^2 \\ &= (s) (2s)^2 \\ &= 4s^3 \end{aligned}$$

Jadi, pada suhu yang sama $s \text{ AgN}_3 < s \text{ Pb(N}_3)_2 = s \text{ SrF}_2$

7. Diketahui : timbal (II) iodida

Ditanya : Hasil kali kelarutan timbal (II) iodide

Penyelesaian :



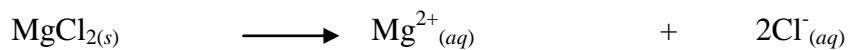
$$K_{sp} = [\text{Pb}^{2+}] [\text{I}^{-}]^2$$

8. Diketahui : $K_{sp} \text{ Mg(OH)}_2 = 1,2 \times 10^{-11}$

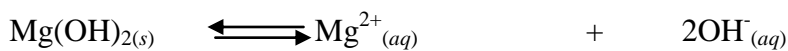
Larutan MgCl_2 0,2 M ditambah NaOH sehingga pH naik

Ditanya : Pada pH berapa mulai terbentuk endapan

Penyelesaian:



$$\begin{array}{ccc} 0,2\text{M} & 0,2\text{M} & 0,4\text{M} \end{array}$$



$$K_{sp} = [\text{Mg}^{2+}] [\text{OH}^{-}]^2$$

$$1,2 \times 10^{-12} \text{ M}^3 = 0,2\text{M} [\text{OH}^{-}]^2$$

$$\frac{1,2 \times 10^{-12} \text{ M}^3}{0,2\text{M}} = [\text{OH}^{-}]^2$$

$$0,2\text{M}$$

$$7,7 \times 10^{-6} \text{ M} = [\text{OH}^-]$$

$$\text{pOH} = 6 - \log 7,7$$

$$\text{pOH} = 5,11$$

$$\text{pH} = 14 - 5,11 = 8,89 \cong 9$$