

Post-Laboratory Questions

(Use the spaces provided for the answers and additional paper if necessary.)

- Define the solubility of a substance.
- Convert your experimental solubility of KHT (in mol L^{-1}) to g KHT per 100 mL. Compare this solubility to the literature value, obtainable from a chemistry handbook.

- Given the following solubility vs. temperature data for two compounds, answer the questions below.

Compound A

temperature, °C	25.0	26.7	30.8	41.7	48.0	63.0
solubility, mol L^{-1}	5.60	5.81	6.23	6.46	6.71	7.27

Compound B

temperature, °C	25.0	38.6	43.4	49.0	52.0	56.2	60.0	67.2
solubility, mol L^{-1}	3.54	6.28	7.17	8.37	9.13	10.0	11.2	12.6

- On graph paper, plot solubility vs. temperature for both compounds on one set of axes. — *Be sure to clearly label each!*
- Which compound's solubility is more affected by changes in temperature? Explain.

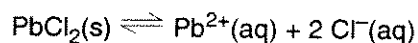
answers

name

section

date

4. An experiment similar to the one described in this module was performed to determine the solubility and solubility product constant of lead(II) chloride ($K_{sp} = 278.10$). The equilibrium involved is



The dissolved chloride in the filtered solution was quantitatively precipitated as AgCl by the addition of excess AgNO₃ solution. The solid AgCl was filtered from solution, dried, and weighed. The following data were obtained for three samples of the filtered, saturated solution.

	<i>determination</i>		
	1	2	3
temperature of solution, °C	20.2	20.4	20.1
volume of PbCl ₂ solution analyzed, mL	25.00	22.00	20.10
mass of dry AgCl, g	0.2543	0.2276	0.2051

Calculate the following:

number of moles of:

AgCl(s)

Cl⁻(aq)

Pb²⁺(aq)

[Cl⁻] in PbCl₂ solution, M

[Pb²⁺] in PbCl₂ solution, M

K_{sp}

average K_{sp}

solubility of PbCl₂, in
g per 100 mL

chemistry handbook value for
solubility at 20°, g per 100 mL
