

19 • Precipitation Reactions

K_{sp} FOR CALCIUM HYDROXIDE

1. Knowing your ions, write the chemical formula for calcium hydroxide: _____
2. Write the equation for the solubility equilibrium of the slightly soluble base, calcium hydroxide. Include phases [(s), (l), etc.]
3. Write the K_{sp} expression for this reaction: $K_{sp} =$
4. **If** a saturated solution of calcium hydroxide had a molarity of 0.0125 M,
[Ca²⁺] = _____ [OH⁻] = _____
5. For solids with low solubility, a **saturated solution** is an **equilibrium** situation. Calculate the K_{sp} **if** the solubility of calcium hydroxide were 0.0125 M.

Demonstration Labette:

- a. We measured _____ mL of saturated calcium hydroxide solution.
- b. After adding indicator solution, _____ M HCl is added.
- c. It took _____ drops of HCl to neutralize the sample of calcium hydroxide.
- d. 1.0 mL is _____ drops of HCl. We used _____ mL of HCl in our titration.
- e. Use the formula: $V_a M_a = V_b M_b$ to calculate the [OH⁻].
- f. The [Ca²⁺] = _____
- g. Calculate the K_{sp} of calcium hydroxide.
- h. Appendix J (Page A-28) gives the actual K_{sp} for calcium hydroxide as: _____

Reactions:

“Limestone” is _____. It can be turned into “lime” and a common gas by heating in a kiln or furnace. Predict the reaction if: “Solid limestone is strongly heated.”

“Lime” is _____. When mixed with water, it turns into “limewater”. Predict the reaction if: “Solid lime is added to distilled water.”

What gas is “limewater” used as a test for? _____
Predict the reaction if: “Carbon dioxide gas is bubbled through limewater.”