**Acid Equilibria**

\[
\ce{CO3^{2-}(aq) + H2O(l) <=> HCO3^{-}(aq) + OH^{-}(aq)}
\]

with \(K_b = 2.0 \times 10^{-4}\)

\[
\ce{HCO3^{-}(aq) + H2O(l) <=> H2CO3(aq) + OH^{-}(aq) }
\]

with \(K_b = 2.5 \times 10^{-8}\)

\[
\ce{H2CO3(aq) <=> H2O(l) + CO2(g)}
\]

Carbonate ion, a moderately strong base, undergoes considerable hydrolysis in aqueous solution. In strongly acidic solution, \(\ce{CO2}\) gas is evolved.

**Solubility**

Carbonate ion can be precipitated from solution as white barium or calcium salts that have low solubilities:

\[
\ce{BaCO3(s) <=> Ba^{2+}(aq) + CO3^{2-}(aq)}
\]

\(K_{sp} = 5.0 \times 10^{-9}\)

\[
\ce{CaCO3(s) <=> Ca^{2+}(aq) + CO3^{2-}(aq)}
\]

with \(K_{sp} = 7.5 \times 10^{-9}\)

Although many carbonate salts are insoluble, those of \(\ce{Na^{+}}\), \(\ce{K^{+}}\), and \(\ce{NH4^{+}}\) are quite soluble. All bicarbonate (\(\ce{HCO3^{-}}\)) salts are soluble. Because of this, even insoluble carbonate salts dissolve in acid.

**Oxidation-Reduction**

None.