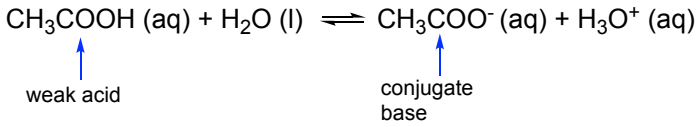
Buffers

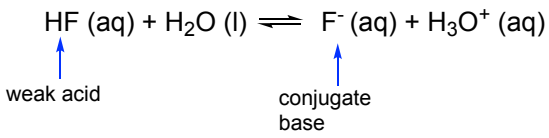
- Buffer solutions:
  - A mixture of a weak acid and its conjugate base or a weak base and its conjugate acid with the purpose of resisting changes to pH
  - This means that you can add a strong acid or base to a buffer solution, and the pH of the solution will not significantly change.

- Case One: Weak Acid and Conjugate Base

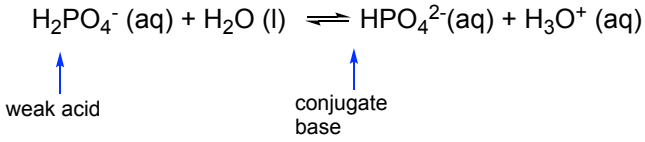
Example One: Acetic Acid



Example Two: Hydrofluoric Acid

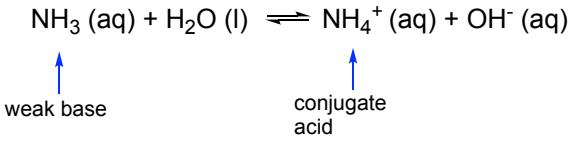


Example Three: Dihydrogenphosphate



- Case Two: Weak Base and Conjugate Acid

Example One: Ammonia



Henderson-Hasselback (HH) Equation

$$pH = -\log\left(\frac{Conjugate\ Base}{Acid}\right) \text{ AKA } pH = -\log\left(\frac{A-}{HA}\right)$$

- The purpose of HH is to estimate the pH of a buffer solution when given a certain concentration or amount of acid and base