

## Sections 16.6 - 16.7: Buffer Solutions

Buffer solutions have the ability to resist changes in pH upon addition of small amounts of either **acid** or **base**.

Buffers are very important in chemical and physiological processes. The pH in the human body varies from one fluid to another. For example, the pH of blood is 7.4, whereas the pH of gastric juices in the stomach is about 1.5. Blood can absorb the **acids** and **bases** produced in biological reactions without changing its pH. Thus, blood is a buffer solution.

A buffer solution consists of a weak **acid** and its salt or a weak **base** and its salt. In other words, a buffer solution follows the concepts of common ion solutions.

An example of an **acidic** buffer solution is a mixed solution of the weak **acid**, HF, and its salt, NaF. Similarly, an example of a **basic** buffer solution is a mixed solution of the weak **base**,  $\text{NH}_3$ , and its salt,  $\text{NH}_4\text{Cl}$ . By choosing appropriate solutes and concentrations, a buffer solution can be created for any desired pH.