

Success 24/7 Chemistry: Buffers

Buffer

- Solution which resists changes in pH when small amounts of acid or base are added.
- Buffers consist of a weak acid or base and one of its salts.
- Buffer capacity– The amount of acid or base that a buffer can absorb without large changes in pH.
- When a strong acid (H^+) or a base (OH^-) reacts with a buffer, one part of the buffer changes into the other.
- Buffers are very important in our body. Blood must maintain a pH of 7.35 – 7.45.
- Buffer systems in the blood: $\text{H}_2\text{CO}_3/\text{HCO}_3^-$ & $\text{H}_2\text{PO}_4^-/\text{HPO}_4^{2-}$

Buffer Examples:

Acetic acid/acetate System - $\text{HC}_2\text{H}_3\text{O}_2/\text{C}_2\text{H}_3\text{O}_2^-$

- Addition of H^+
- Addition of OH^-

Ammonia/Ammonium System - $\text{NH}_3/\text{NH}_4^+$

- Addition of H^+
- Addition of OH^-

Carbonic Acid/ Hydrogen Carbonate System - $\text{H}_2\text{CO}_3/\text{HCO}_3^-$

- Addition of H^+
- Addition of OH^-

Write two equations to show how the addition of an acid or a base would affect the $\text{H}_2\text{PO}_4^-/\text{HPO}_4^{2-}$ buffer system.