ACIDS & BASES: REVIEW

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1. Arrhenius
   - acid – molecular compounds which ionize and release H^+ ions

     $HCl \rightarrow H^+ + Cl^-$

   - base – ionic compounds which dissociate and release OH- ions

     $KOH \rightarrow K^+ + OH^-$

ACIDS & BASES: REVIEW

2. Bronsted-Lowry

- acid – compounds donate a proton to water to form H_3O^+

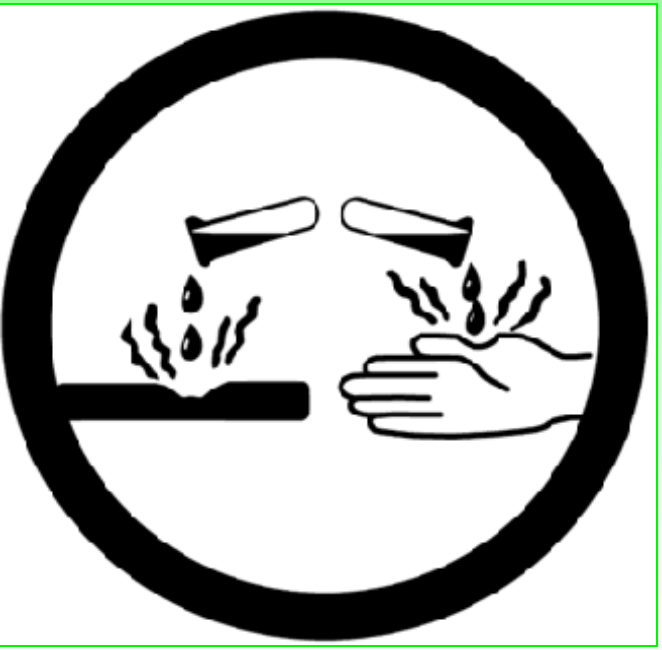
  $CH_3COOH + H_2O <====> CH_3COO^- + H_3O^+$

- base – compounds receive a proton from water to form OH^-

  $NH_3 + H_2O <====> NH_4^+ + OH^-$

ACIDS & BASES: REVIEW

Strong Acids and Bases



Acids and bases are considered strong when they almost fully ionize or dissociate in water (essentially 100%).

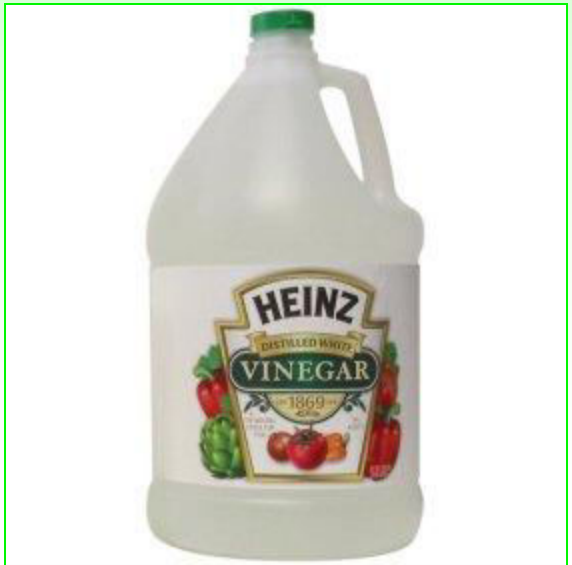
$$HNO_3 \rightarrow H^+ + NO_3^-$$

ACIDS & BASES: REVIEW

Weak Acids and Bases

Acids and bases are considered weak when they poorly ionize or dissociate in water (much lower than 100%).

$$CH_3COOH + H_2O <====> CH_3COO^- + H_3O^+$$



ACIDS & BASES: REVIEW

Conjugate Acids and Bases

Conjugate acid-base pair

$$HCN_{(aq)} + H_2O \;\text{<====>}\; H_3O^+_{(aq)} + CN^-_{(aq)}$$

Conjugate acid-base pair

ACIDS & BASES: REVIEW

Conjugate Acids and Bases

1. What are the conjugate bases of HNO_3 and HSO_4^-?

   NO_3^- and SO_4^{2-}

2. What are the formulas of the conjugate acids of OH^- and PO_4^{3-}?

   H_2O and HPO_4^{2-}