## Properties of Acids

| |
|---|
| Conducts electricity |
| Tastes sour |
| Neutralizes bases |
| Reacts with metals to form hydrogen gas |
| pH between 0-7 |
| Corrodes metals |

## Strong Acids vs Weak Acids

| | |
|---|---|
| Reacts completely (>99%) with water to produce a high concentration of hydronium ions | Reacts incomp-letely with water (<50%) to form relatively few hydronium ions |
| Low pH | Relatively high pH |
| High electrical conductivity | Relatively low conductivity |
| High rate of reaction with metals and carbonates | Low rate of reaction with active metals and carbonates |

## Properties of Bases

| |
|---|
| Conducts electricity |
| Tastes bitter |
| Neutralizes acids |
| pH between 7-14 |
| Dissolves grease |
| Feels slippery/soapy |

## Strong Bases vs Weak Bases

| | |
|---|---|
| Dissociates completely (>99%) | Reacts partially with water (<50%) |
| High pH (closer to 14) | Lower pH (closer to 8) |
| Faster reaction rate | Slower reaction rate |
| High conductivity | Low conductivity |

## Classical Naming of Acids

| | |
|---|---|
| Ending in -ide | hydro_____ic acid |
| Ending in -ate | _____ic acid |
| Ending in -ite | _____ous acid |

## Classical Naming of Bases

Generally ionic hydroxides

Use the standard ionic naming (NaOH is sodium hydroxide)

## Bronsted-Lowry Acid-Base Concept

**Bronsted-Lowry Acid:** a proton donor
**Bronsted-Lowry Base:** a proton acceptor

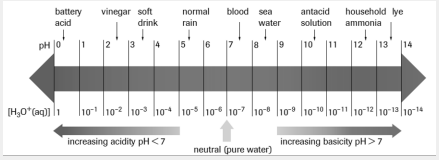
## Neutralization


**Neutralization:** a type of double replac-ement between an acid and a base

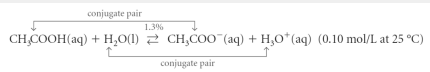
## Amphoteric Substances

**Amphoteric Substances:** substances that can react as an acid or as a base

## pH Chart




## Conjugate Acids & Bases




In a proton transfer reaction at equilibrium, both forward and reverse reactions involve Bronsted-Lowrey acids and bases
**Conjugate Acids/Bases:** a pair on substances with formulas that differ only by a proton

## Monoprotic & Polyprotic Acids

**Monoprotic Acids:** only have one acidic hydrogen ion in their compound formula and can *react only once with water* to produce hydronium ions

- Most strong acids and some weak acids are monoprotic acids

- Ex. Monoprotic Acids: HCl and HCN

**Polyprotic Acids:** contain more than one acidic hydrogen in their compound formula and can *react more than once* with water

- Generally weak acids whose reaction with water decreases with each successive step

- Exception is sulfuric acid because the first reaction is essentially complete

- Ex. Polyprotic Acid: H3PO4

## Monoprotic & Polyprotic Bases

**Monoprotic Bases:** can react with water only once to produce hydroxide ions

- Ex. CH3COO-

**Polyprotic Bases:** weak bases whose reaction with water decreases with each successive step

- Ex. CO3 2-