

## Section 5.1 Acids and Bases

What is an Acid?

- Defined by its behavior!
- A molecular compound (2 or more non metals)
- When dissolved in water it conducts electricity
- It reacts with metals to produce hydrogen gas  
e.g.  $\text{Zn} + 2\text{HCl} \rightarrow \text{H}_2 + \text{ZnCl}_2$
- It reacts with carbonates to produce  $\text{CO}_2$  gas  
e.g.  $\text{HBr} + \text{NaHCO}_3 \rightarrow \text{NaBr} + \text{H}_2\text{O} + \text{CO}_2$
- Reacts with bases to produce water and a salt  
(salt = ionic compound)
- Sour tasting
- Feels like water
- Most acids contain hydrogen atoms but all of them release or produce hydrogen ions when dissolved in water  
e.g.  $\text{HCl}_{(\text{aq})} \rightarrow \text{H}^{+}_{(\text{aq})} + \text{Cl}^{-}_{(\text{aq})}$
- It is the free hydrogen ion (proton) that gives acids their characteristics
- They are corrosive "burn" (reacts with organic material)
- They have a pH less than 7
- Turn litmus paper red

## What is an Base?

- Defined by its behavior!
- An ionic compound (metal and non metal)
- When dissolved in water it conducts electricity
- It does not react with metals
- It does not react with carbonates
- Reacts with acids to produce water and a salt  
(salt = ionic compound)
- bitter tasting
- feels slippery
- Most bases contain hydroxide ions but all of them release or produce hydroxide ions when dissolved in water  
e.g.  $\text{NaOH}_{(\text{aq})} \rightarrow \text{Na}^{+}_{(\text{aq})} + \text{OH}^{-}_{(\text{aq})}$
- It is the free hydroxide ion that gives bases their characteristics
- Bases react with proteins to break them down  
(drain cleaner dissolves hair in a clogged sink)
- They have a pH greater than 7
- Turn litmus paper blue

## NAMING ACIDS

- The formula of an acid always has the hydrogen written first
- Binary acids start with the name Hydro – and then end with the nonmetal changing its ending to “ic” and then adding the word “acid”
- Polyatomic acids with oxygen have the remaining non metal identified and the ending changing to “ic acid”

## NAMING BASES

- Formula starts with a cation (metal ion or ammonium ion) and ends with hydroxide “OH”
- Name the base following the same rules as ionic compounds