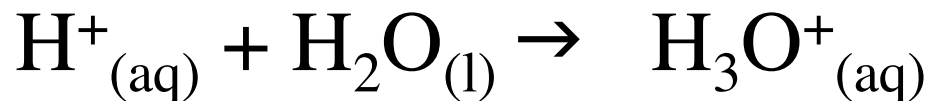


# Acids

## The special chemistry of hydrogen

Acids produce hydrogen ion ( $\text{H}^+$ ) in water solution.

$\text{H}^+_{(\text{aq})}$ ,  $\text{H}_3\text{O}^+_{(\text{aq})}$ , and a proton in water are all identical chemical notations. All three describe the same chemical situation.



A hydrogen atom is one proton and one electron.

Losing one electron gives one proton  $\rightarrow \text{H}^+$

# Properties of Acids

The defining characteristic of acids is that they produce  $\text{H}^+$  in water solution.

Acids react with metals to produce salt and  $\text{H}_2$  (g)

Acids taste sour

Acids turn litmus (an indicator) red (or pink)

Acids turn phenolphthalein colorless

Acids neutralize bases to form salt and water

Acids have a pH of less than 7

# Properties of Bases

The defining characteristic of bases is that they produce  $\text{OH}^-$  in water solution.

Bases feel slippery

Bases taste bitter

Bases turn litmus (an indicator) blue

Bases turn phenolphthalein red (magenta)

Bases neutralize acids to form salt and water

Bases have a pH of more than 7

# Systematic Naming of Acids

Because acids are such special compounds there is an additional naming system used just for acids.

# Binary Acids

Names of compounds that used to be  
hydrogen \_\_\_\_\_ide

are changed to be hydro \_\_\_\_\_ic acid.

Examples:

HCl hydrogen chloride  $\Rightarrow$  hydrochloric acid

HBr hydrogen bromide  $\Rightarrow$  hydrobromic acid

H<sub>2</sub>S hydrogen sulfide  $\Rightarrow$  hydrosulfuric acid

# Oxy Acids

Names of compounds that used to be  
hydrogen \_\_\_\_\_ate  
are changed to \_\_\_\_\_ic acid.

Examples:

$\text{HNO}_3$  hydrogen nitrate  $\Rightarrow$  nitric acid

$\text{H}_2\text{SO}_4$  hydrogen sulfate  $\Rightarrow$  sulfuric acid

$\text{H}_2\text{CO}_3$  hydrogen carbonate  $\Rightarrow$  carbonic acid

# Oxy Acids

Names of compounds that used to be  
hydrogen \_\_\_\_\_ite  
are changed to \_\_\_\_\_ous acid.

Examples:

$\text{HNO}_2$  hydrogen nitrite  $\Rightarrow$  nitrous acid

$\text{H}_2\text{SO}_3$  hydrogen sulfite  $\Rightarrow$  sulfurous acid

$\text{HClO}_2$  hydrogen chlorite  $\Rightarrow$  chlorous acid