

Naming Acids

Chem Worksheet 9-3

Name _____

Acids are compounds that can donate the hydrogen ion, H^+ . When the formula for an acid is written the symbol for this hydrogen generally appears at the beginning of the formula. For example the formula for hydrochloric acid is written HCl and the formula for phosphoric acid is H_3PO_4 . Notice that both formulas begin with the letter H. In both cases the acid is made of a hydrogen ion (or hydrogen ions) and a negative ion, known as the **anion**.

The name for an acid is based on the name of the anion. If the anion ends with the letters -ide, the acid is named one way while acids containing anions that end with -ate use a different rule. Remember that monatomic anions typically end with -ide. The rules for naming acids are summarized below.

Naming Acids

Anion called (root) **ide**
 Example: sulfide, S^{2-}
 ↓
 Acid called **hydro (root) ic acid**
 Example: hydrosulfuric acid, H_2S

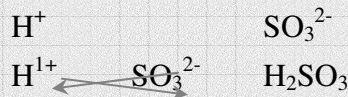
Anion called (root) **ate**
 Example: chlorate, ClO_3^-
 ↓
 Acid called (root) **ic acid**
 Example: chloric acid, $HClO_3$

Anion called (root) **ite**
 Example: chlorite, ClO_2^-
 ↓
 Acid called (root) **ous acid**
 Example: chlorous acid, $HClO_2$

Examples

#1. Write the chemical formula for: sulfurous acid.

- this acid contains the hydrogen ion and the sulfite ion:
- create a neutral compound from these ions:



#2. Name the following acid: H_2CO_3 .

- this acid contains the hydrogen ion and the carbonate ion:
- the name of the negative ion is **carbonate**, therefore the acid is called **carbonic acid**.



Fill in the following table with the missing information.

	Formula	Cation	Formula for anion	Name of anion	Name of Acid
1.	HCl	H^+	Cl^-	chloride	
2.	HNO_3	H^+		nitrate	
3.		H^+	F^-		hydrofluoric acid
4.	H_2SO_4	H^+	SO_4^{2-}		
5.		H^+		carbonate	
6.	H_2SO_3			sulfite	
7.			ClO_3^-		chloric acid
8.		H^+		phosphate	
9.	$H_2C_2O_4$			oxalate	
10.					hydrocyanic acid
11.					acetic acid
12.			I^-		
13.				sulfide	
14.	HClO				
15.			AsO_4^{3-}	arsenate	
16.					nitrous acid

Naming Acids

Chem Worksheet 9-3

Name key

Acids are compounds that can donate the hydrogen ion, H^+ . When the formula for an acid is written the symbol for this hydrogen generally appears at the beginning of the formula. For example the formula for hydrochloric acid is written HCl and the formula for phosphoric acid is H_3PO_4 . Notice that both formulas begin with the letter H. In both cases the acid is made of a hydrogen ion (or hydrogen ions) and a negative ion, known as the **anion**.

The name for an acid is based on the name of the anion. If the anion ends with the letters **-ide**, the acid is named one way while acids containing anions that end with **-ate** use a different rule. Remember that monatomic anions typically end with **-ide**. The rules for naming acids are summarized below.

Naming Acids

Anion called (root) **ide**
Example: sulfide, S^{2-}
↓
Acid called **hydro (root) ic acid**
Example: hydrosulfuric acid, H_2S

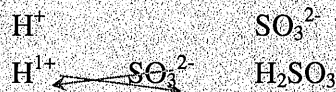
Anion called (root) **ate**
Example: chlorate, ClO_3^-
↓
Acid called (root) ic acid
Example: chloric acid, $HClO_3$

Anion called (root) **ite**
Example: chlorite, ClO_2^-
↓
Acid called (root) ous acid
Example: chlorous acid, $HClO_2$

Examples

#1. Write the chemical formula for: sulfurous acid.

- this acid contains the hydrogen ion and the sulfite ion:



- create a neutral compound from these ions:

#2. Name the following acid: H_2CO_3 .

- this acid contains the hydrogen ion and the carbonate ion:



- the name of the negative ion is **carbonate**, therefore the acid is called **carbonic acid**.

Fill in the following table with the missing information.

	Formula	Cation	Formula for anion	Name of anion	Name of Acid
1.	HCl	H^+	Cl^-	chloride	hydrochloric acid
2.	HNO_3	H^+	NO_3^-	nitrate	nitric acid
3.	HF	H^+	F^-	fluoride	hydrofluoric acid
4.	H_2SO_4	H^+	SO_4^{2-}	sulfate	sulfuric acid
5.	H_2CO_3	H^+	CO_3^{2-}	carbonate	carbonic acid
6.	H_2SO_3	H^+	SO_3^{2-}	sulfite	sulfurous acid
7.	$HClO_3$	H^+	ClO_3^-	chlorate	chloric acid
8.	H_3PO_4	H^+	PO_4^{3-}	phosphate	phosphoric acid
9.	$H_2C_2O_4$	H^+	$C_2O_4^{2-}$	oxalate	oxalic acid
10.	HCN	H^+	CN^-	cyanide	hydrocyanic acid
11.	$HC_2H_3O_2$	H^+	$C_2H_3O_2^-$	acetate	acetic acid
12.	HI	H^+	I^-	iodide	hydroiodic acid
13.	H_2S	H^+	S^{2-}	sulfide	hydrosulfuric acid
14.	$HClO$	H^+	ClO^-	hypochlorite	hypochlorous acid
15.	H_3AsO_4	H^+	AsO_4^{3-}	arsenate	arsenic acid
16.	HNO_2	H^+	NO_2^-	nitrite	nitrous acid