

### Symbols and Charges for Monoatomic Ions

Symbol	Name	Symbol	Name		
H <sup>+</sup>	hydrogen ion	H <sup>-</sup>	hydride		
Li <sup>+</sup>	lithium ion	F <sup>-</sup>	fluoride	Note that the letters in an ion's name before the -ide ending is the stem. For example, the stem for bromide is brom-.	
Na <sup>+</sup>	sodium ion	Cl <sup>-</sup>	chloride		
K <sup>+</sup>	potassium ion	Br <sup>-</sup>	bromide		
Rb <sup>+</sup>	rubidium ion	I <sup>-</sup>	iodide		
Cs <sup>+</sup>	cesium ion	O <sup>2-</sup>	oxide		
Be <sup>2+</sup>	beryllium ion	S <sup>2-</sup>	sulfide		
Mg <sup>2+</sup>	magnesium ion	Se <sup>2-</sup>	selenide		
Ca <sup>2+</sup>	calcium ion	Te <sup>2-</sup>	telluride		
Sr <sup>2+</sup>	strontium ion				
Ba <sup>2+</sup>	barium ion	Ag <sup>+</sup>	silver ion		N <sup>3-</sup>
Ra <sup>2+</sup>	radium ion	Ni <sup>2+</sup>	nickel ion	P <sup>3-</sup>	phosphide
Zn <sup>2+</sup>	zinc ion	Al <sup>3+</sup>	aluminum ion	As <sup>3-</sup>	arsenide

Symbol	Systematic name (Stock system)	Common name	Symbol	Systematic name (Stock system)	Common name
Cu <sup>+</sup>	copper(I)	cuprous	Hg <sub>2</sub> <sup>2+</sup>	mercury(I)	mercurous
Cu <sup>2+</sup>	copper(II)	cupric	Hg <sup>2+</sup>	mercury(II)	mercuric
Fe <sup>2+</sup>	iron(II)	ferrous	Pb <sup>2+</sup>	lead(II)	plumbous
Fe <sup>3+</sup>	iron(III)	ferric	Pb <sup>4+</sup>	lead(IV)	plumbic
Sn <sup>2+</sup>	tin(II)	stannous	Co <sup>2+</sup>	cobalt(II)	cobaltous
Sn <sup>4+</sup>	tin(IV)	stannic	Co <sup>3+</sup>	cobalt(III)	cobaltic
Cr <sup>2+</sup>	chromium(II)	chromous	Au <sup>+</sup>	gold(I)	aurous
Cr <sup>3+</sup>	chromium(III)	chromic	Au <sup>3+</sup>	gold(III)	auric
Mn <sup>2+</sup>	manganese(II)	manganous			
Mn <sup>3+</sup>	manganese(III)	manganic			

### Symbols and Charges for Polyatomic Ions

Formula	Name	Formula	Name
NO <sub>3</sub> <sup>-</sup>	nitrate	ClO <sub>4</sub> <sup>-</sup>	perchlorate
NO <sub>2</sub> <sup>-</sup>	nitrite	ClO <sub>3</sub> <sup>-</sup>	chlorate
CrO <sub>4</sub> <sup>2-</sup>	chromate	ClO <sub>2</sub> <sup>-</sup>	chlorite
Cr <sub>2</sub> O <sub>7</sub> <sup>2-</sup>	dichromate	ClO <sup>-</sup>	hypochlorite
CN <sup>-</sup>	cyanide	IO <sub>4</sub> <sup>-</sup>	periodate
MnO <sub>4</sub> <sup>-</sup>	permanganate	IO <sub>3</sub> <sup>-</sup>	iodate
OH <sup>-</sup>	hydroxide	IO <sup>-</sup>	hypoiodite
O <sub>2</sub> <sup>2-</sup>	peroxide	BrO <sub>3</sub> <sup>-</sup>	bromate
NH <sub>2</sub> <sup>-</sup>	amide	BrO <sup>-</sup>	hypobromite
CO <sub>3</sub> <sup>2-</sup>	carbonate	HCO <sub>3</sub> <sup>-</sup>	hydrogen carbonate (bicarbonate)
SO <sub>4</sub> <sup>2-</sup>	sulfate	HSO <sub>4</sub> <sup>-</sup>	hydrogen sulfate (bisulfate)
SO <sub>3</sub> <sup>2-</sup>	sulfite	HSO <sub>3</sub> <sup>-</sup>	hydrogen sulfite (bisulfite)
C <sub>2</sub> O <sub>4</sub> <sup>2-</sup>	oxalate	HC <sub>2</sub> O <sub>4</sub> <sup>-</sup>	hydrogen oxalate (binoxalate)
PO <sub>4</sub> <sup>3-</sup>	phosphate	HPO <sub>4</sub> <sup>2-</sup>	hydrogen phosphate
PO <sub>3</sub> <sup>3-</sup>	phosphite	H <sub>2</sub> PO <sub>4</sub> <sup>-</sup>	dihydrogen phosphate

### More Symbols and Charges for Polyatomic Ions

$S_2O_3^{2-}$	thiosulfate	$HS^-$	hydrogen sulfide
$AsO_4^{3-}$	arsenate	$BO_3^{3-}$	borate
$SeO_4^{2-}$	selenate	$B_4O_7^{2-}$	tetraborate
$SiO_3^{2-}$	silicate	$SiF_6^{2-}$	hexafluorosilicate
$C_4H_4O_6^{2-}$	tartrate	$SCN^-$	thiocyanate

$C_2H_3O_2^-$  acetate (an alternate way to write acetate is  $CH_3COO^-$ )

There is one positive polyatomic ion. It is  $NH_4^+$  and is called the ammonium ion.

### Prefixes Used to Indicate Number in a Name Involving Two Non-Metals

mono-	1	hexa-	6
di-	2	hepta-	7
tri-	3	octa-	8
tetra-	4	nona-	9
penta-	5	deca-	10

These prefixes are used in naming binary compounds involving two non-metals. Example include  $P_2O_5$ ,  $Cl_2O$ ,  $NO$ ,  $N_2O$ ,  $NO_2$ ,  $N_2O_5$ ,  $PCl_3$ ,  $PCl_5$ ,  $SO_2$ ,  $SO_3$ ,  $SiO_2$ . Sometimes metal ions are involved in a Greek prefix name, but these are less common. Examples include  $UF_6$ ,  $SbCl_3$ ,  $SbCl_5$ ,  $OsO_4$ ,  $BiCl_3$ .

There is a preferred order of the nonmetals when writing them in a formula. It is: Rn, Xe, Kr, B, Si, C, Sb, As, P, N, H, Te, Se, S, I, Br, Cl, O, F.

CO is carbon monoxide, NOT carbon monooxide.  $As_4O_6$  is tetrarsenic hexoxide, NOT tetraarsenic hexaoxide.

Acid Names – add the word acid to each name when saying or writing.

#### Non-oxygen containing

Formula	Name when dissolved in water
HF	hydrofluoric acid
HCl	hydrochloric acid
HBr	hydrobromic acid
HI	hydroiodic acid
HCN	hydrocyanic acid
$H_2S$	hydrosulfuric acid

#### Oxygen containing (oxyacids)

Name when a pure compound		Formula	Name
hydrogen fluoride		$HNO_3$	nitric acid
hydrogen chloride		$HNO_2$	nitrous acid
hydrogen bromide		$H_2SO_4$	sulfuric acid
hydrogen iodide		$H_2SO_3$	sulfurous acid
hydrogen cyanide		$H_3PO_4$	phosphoric acid
hydrogen sulfide		$H_2CO_3$	carbonic acid
		$HC_2H_3O_2$	acetic acid

(Note that it is hydrogen sulfide, NOT hydrogen sulfide.)

(also written  $CH_3COOH$ )