

B, I, N, C, H, O, F - Diatomic Ions

Boron
 Iodine
 Nitrogen
 Chlorine
 Hydrogen
 Oxygen
 Fluorine

Symbols and Charges for Monoatomic Ions

Symbol	Name
H ⁺	hydrogen ion
Li ⁺	lithium ion
Na ⁺	sodium ion
K ⁺	potassium ion
Rb ⁺	rubidium ion
Cs ⁺	cesium ion
Be ²⁺	beryllium ion
Mg ²⁺	magnesium ion
Ca ²⁺	calcium ion
Sr ²⁺	strontium ion
Ba ²⁺	barium ion
Ra ²⁺	radium ion
Zn ²⁺	zinc ion

Symbol	Name
F ⁻	fluoride
Cl ⁻	chloride
Br ⁻	bromide
I ⁻	iodide
O ²⁻	oxide
S ²⁻	sulfide
Se ²⁻	selenide
Te ²⁻	telluride
Ag ⁺	silver ion
Ni ²⁺	nickel ion
Al ³⁺	aluminum ion

Note that the letters in an ion's name before the -ide ending is the stem. For example, the stem for bromide is brom-.

N ³⁻	nitride
P ³⁻	phosphide
As ³⁻	arsenide

Symbol	Systematic name (Stock system)	Common name
Cu ⁺	copper(I)	cuprous
Cu ²⁺	copper(II)	cupric
Fe ²⁺	iron(II)	ferrous
Fe ³⁺	iron(III)	ferric
Sn ²⁺	tin(II)	stannous
Sn ⁴⁺	tin(IV)	stannic
Cr ²⁺	chromium(II)	chromous
Cr ³⁺	chromium(III)	chromic
Mn ²⁺	manganese(II)	manganous
Mn ³⁺	manganese(III)	manganic

Symbol	Systematic name (Stock system)	Common name
Hg ²⁺	mercury(I)	mercurous
Hg ²⁺	mercury(II)	mercuric
Pb ²⁺	lead(II)	plumbous
Pb ⁴⁺	lead(IV)	plumbic
Co ²⁺	cobalt(II)	cobaltous
Co ³⁺	cobalt(III)	cobaltic
Au ⁺	gold(I)	aurous
Au ³⁺	gold(III)	auric

Symbols and Charges for Polyatomic Ions

Formula	Name
* NO ₃ ⁻	nitrate
NO ₂ ⁻	nitrite
CrO ₄ ²⁻	chromate
Cr ₂ O ₇ ²⁻	dichromate
CN ⁻	cyanide
MnO ₄ ⁻	permanganate
* OH ⁻	hydroxide
O ₂ ²⁻	peroxide
NH ₂ ⁻	amide
* CO ₃ ²⁻	carbonate
* SO ₄ ²⁻	sulfate
SO ₃ ²⁻	sulfite
C ₂ O ₄ ²⁻	oxalate
* PO ₄ ³⁻	phosphate
PO ₃ ³⁻	phosphite

Formula	Name
ClO ₄ ⁻	perchlorate
ClO ₃ ⁻	chlorate
ClO ₂ ⁻	chlorite
ClO ⁻	hypochlorite
IO ₄ ⁻	periodate
IO ₃ ⁻	iodate
IO ⁻	hypoiodite
BrO ₃ ⁻	bromate
BrO ⁻	hypobromite
HCO ₃ ⁻	hydrogen carbonate (bicarbonate)
HSO ₄ ⁻	hydrogen sulfate (bisulfate)
HSO ₃ ⁻	hydrogen sulfite (bisulfite)
HC ₂ O ₄ ⁻	hydrogen oxalate (binoxalate)
HPO ₄ ²⁻	hydrogen phosphate
H ₂ PO ₄ ⁻	dihydrogen phosphate

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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 tetraarsenic 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	Name when a pure compound
HF	hydrofluoric acid	hydrogen fluoride
HCl	hydrochloric acid	hydrogen chloride
HBr	hydrobromic acid	hydrogen bromide
HI	hydroiodic acid	hydrogen iodide
HCN	hydrocyanic acid	hydrogen cyanide
H_2S	hydrosulfuric acid	hydrogen sulfide

Oxygen containing (oxyacids)

Formula	Name
HNO_3	nitric acid
HNO_2	nitrous acid
H_2SO_4	sulfuric acid
H_2SO_3	sulfurous acid
H_3PO_4	phosphoric acid
H_2CO_3	carbonic acid
$HC_2H_3O_2$	acetic acid

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

(also written CH_3COOH)