

Rules for Naming Binary Ionic Compounds

Examples:

NaCl – sodium chloride BaF₂ – barium fluoride

CuO – copper (II) oxide

1. The full name of the cation is listed first. (A cation is a positive ion).
2. The root of the anion name is listed second and is followed by the suffix “ide.”(An anion is a negative ion).
3. If the compound contains a transition metal, a Roman numeral is included after the cation name to indicate the oxidation number of the metal.
4. Remember that the cation(s) and anion(s) combine in the simplest ratio that balances the charge. That is, the sum of the charge must be equal to zero in the compound formed.

Rules for Naming Ionic Compounds Containing Polyatomic Ions

Examples:

CaCO₃- calcium carbonate Fe(OH)₃-iron (III) hydroxide

(NH₄)₂SO₄ – ammonium sulfate

1. The full name of the cation is listed first.
2. The full name of the anion is listed second.
3. Use the table below for common polyatomic ions
4. Remember that the cation(s) and anion(s) combine in the simplest ratio that balances the charge. That is, the sum of the charge must be equal to zero in the compound formed.
5. Finally, use parentheses when the simplest ratio requires more than one polyatomic ion in the compound formula.

Common Polyatomic Ions (these ions are also on pages 42 and 43 in the text).

+1	-1	-2	-3
NH ₄ ⁺ (ammonium)	CH ₃ COO ⁻ (acetate) CN ⁻ (cyanide) OH ⁻ (hydroxide)	CO ₃ ²⁻ (carbonate)	PO ₄ ³⁻ (phosphate)
	NO ₃ ⁻ (nitrate) NO ₂ ⁻ (nitrite)	SO ₄ ²⁻ (sulfate) SO ₃ ²⁻ (sulfite)	
	ClO ⁻ (hypochlorite) ClO ₂ ⁻ (chlorite) ClO ₃ ⁻ (chlorate)	CrO ₄ ²⁻ (chromate)	
	ClO ₄ ⁻ (perchlorate)	Cr ₂ O ₇ ²⁻ (dichromate)	
	MnO ₄ ⁻ (permanganate)	HPO ₄ ²⁻ (hydrogen phosphate)	
	HCO ₃ ⁻ (hydrogen carbonate or bicarbonate) H ₂ PO ₄ ⁻ (dihydrogen phosphate)		

