

Summary of Inorganic Nomenclature

FIGURE 6.2 Flow Chart for Inorganic Nomenclature

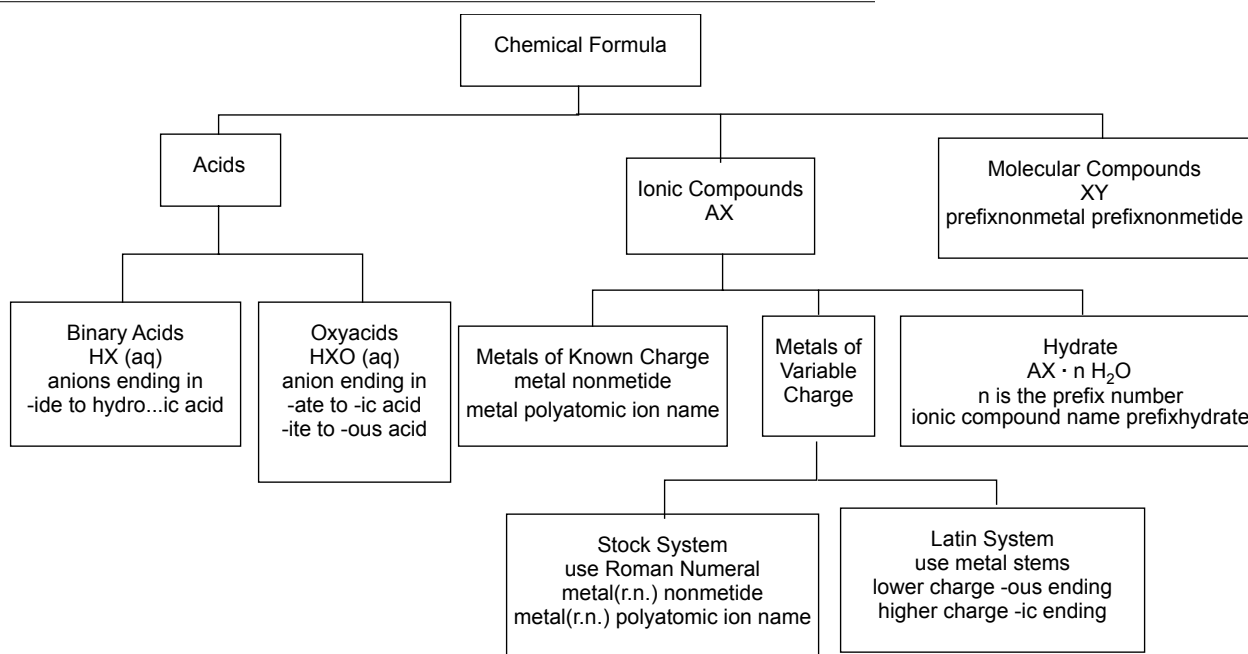


TABLE 6.39

	1	2	3	4	5	6	7	8	9	10
Roman Numeral (r.n.)	I	II	III	IV	V	VI	VII	VIII	IX	X
Greek Prefix	mono	di	tri	tetra	penta	hexa	hepta	octa	nona	deca

In their elemental states metals exist as monoatomic atoms. There are seven nonmetals that exist as diatomic molecules in their elemental state. Mnemonic: **Have No Fear Of Ice Cold Beer**

Hydrogen (H₂), Nitrogen (N₂), Fluorine (F₂), Oxygen (O₂), Iodine (I₂), Chlorine (Cl₂), Bromine (Br₂)

TABLE 6.40 Common Monoatomic Anions

Charge	Ion Name -ide ending	Ion
-1	fluoride	F ⁻
	chloride	Cl ⁻
	bromide	Br ⁻
	iodide	I ⁻
	hydride	H ⁻
-2	oxide	O ²⁻
	sulfide	S ²⁻
-3	nitride	N ³⁻
	phosphide	P ³⁻
-4	carbide	C ⁴⁻

Common Metal Cations of Variable Charge

Element Name	Latin Root	Lower Charge -ous ending	Higher Charge -ic ending
chromium	chrom-	Cr ²⁺	Cr ³⁺
cobalt	cobalt-	Co ²⁺	Co ³⁺
copper	cupr-	Cu ⁺	Cu ²⁺
gold	aur-	Au ²⁺	Au ³⁺
iron	ferr-	Fe ²⁺	Fe ³⁺
lead	plumb-	Pb ²⁺	Pb ⁴⁺
manganese	mangan-	Mn ²⁺	Mn ³⁺
mercury	mercur-	Hg ₂ ²⁺	Hg ²⁺
nickel	nickel-	Ni ²⁺	Ni ³⁺
tin	stann-	Sn ²⁺	Sn ⁴⁺

TABLE 6.41 Common Metal Cations of Known Charge

Charge		Charge		Charge	
+1	Alkali Metals	+2	Alkaline Earth Metals	+3	Aluminum
	Hydrogen		Zinc		Gallium
	Silver		Cadmium		Indium
					Scandium
					Yttrium

TABLE 6.42 Common Polyatomic Ions

	Name	Formula	*	Name	Formula		Name	Formula
	acetate	$C_2H_3O_2^-$	*	formate	CHO_2^-		permanganate	MnO_4^-
	ammonium	NH_4^+		hydride	H^-	*	phosphonium	PH_4^+
	arsenate	AsO_4^{3-}		hydrogen ion/proton	H^+		phosphate	PO_4^{3-}
*	azide	N_3^-		hydronium	H_3O^+		hydrogen phosphate	HPO_4^{2-}
	borate	BO_3^{3-}		hydroxide	OH^-		dihydrogen phosphate	$H_2PO_4^-$
	bromate	BrO_3^-	*	hydrogen sulfide	HS^-		selenate	SeO_4^{2-}
	carbonate	CO_3^{2-}	*	hydroperoxide	O_2^-		silicate	SiO_4^{4-}
	bicarbonate	HCO_3^-		nitrate	NO_3^-		metasilicate	SiO_3^{2-}
	hydrogen carbonate	HCO_3^-		oxalate	$C_2O_4^{2-}$		sulfate	SO_4^{2-}
	chromate	CrO_4^{2-}		chlorate	ClO_3^-		bisulfate	HSO_4^-
	dichromate	$Cr_2O_7^{2-}$		iodate	IO_3^-		tellurate	TeO_4^{2-}
	cyanate	OCN^-		mercury(I)/mercurous	Hg_2^{2+}		thiocyanate	SCN^-
	cyanide	CN^-		peroxide	O_2^{2-}	*	thiosulfate	$S_2O_3^{2-}$

* You do not need to memorize these.

Remember that the charge does not change only the number of oxygen atoms. The -ide ending usually has not oxygen atoms. Some common exceptions are oxide (O^{2-}), hydroxide (OH^-), peroxide (O_2^{2-}) and hyperoxide (O_2^-)

TABLE 6.43 Polyatomic Ion Patterns

prefix...suffix	General Pattern	Number of Oxygen Atoms	Acid Pattern
per...ate	most oxygen atoms	+1	per...ic
...ate	next most oxygen atoms	----	...ic
...ite	second least oxygen atoms	-1	...ous
hypo...ite	least oxygen atoms	-2	hypo...ous
...ide	usually no oxygen atoms	0 (generally)	hydro...ic