

Naming Ions and Acids

Ions of Main Group Elements

METALS

Group IA	+1 ions only	Li^+ , Na^+ , K^+ , Cs^+ , Rb^+	
Group IIA	+2 ions only	Mg^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Ra^{2+}	
Group IIIA	Al^{3+} , Ga^{3+}		
	<u>In^{3+}</u> , In^+	indium(III), indium(I)	
	Tl^{3+} , <u>Tl^+</u>	thallium(III), thallium(I)	Underlined ions
Group IVA	Sn^{4+} , <u>Sn^{2+}</u>	tin(IV), tin(II)	are most stable.
	Pb^{4+} , <u>Pb^{2+}</u>	lead(IV), lead(II)	
Group VA	Sb^{3+} , Bi^{3+}		
NONMETALS			
Group VA	-3 ions	N^{3-} nitride, P^{3-} phosphide	
Group VIA	-2 ions	O^{2-} oxide, S^{2-} sulfide, Se^{2-} selenide	
Group VIIA	-1 ions	F^- fluoride, Cl^- chloride, Br^- bromide, I^- iodide	

Ions of Transition Metals

copper(I)	Cu^+	copper(II)	Cu^{2+}
chromium(II)	Cr^{2+}	chromium(III)	Cr^{3+}
iron(II)	Fe^{2+}	iron(III)	Fe^{3+}
cobalt(II)	Co^{2+}	cobalt(III)	Co^{3+}
mercury(I)	Hg_2^{2+}	mercury(II)	Hg^{2+}
manganese(II)	Mn^{2+}	<manganese(III)>	< Mn^{3+} >
nickel(II)	Ni^{2+}	<nickel(III)>	< Ni^{3+} >

Species in < > are rare.

only one cation form; no Roman numeral!

silver	Ag^+	zinc	Zn^{2+}
cadmium	Cd^{2+}		

Polyatomic Ions

CATIONS

ammonium	NH_4^+	hydronium	H_3O^+
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ANIONS

acetate	$\text{C}_2\text{H}_3\text{O}_2^-$	oxalate	$\text{C}_2\text{O}_4^{2-}$
carbonate	CO_3^{2-}	hydrogen carbonate	HCO_3^-
chromate	CrO_4^{2-}	dichromate	$\text{Cr}_2\text{O}_7^{2-}$
cyanate	OCN^-	thiocyanate	SCN^-
cyanide	CN^-	hydroxide	OH^-
hydrogen sulfate	HSO_4^-	hydrogen sulfite	HSO_3^-
hydrogen phosphate	HPO_4^{2-}	dihydrogen phosphate	H_2PO_4^-
permanganate	MnO_4^-	thiosulfate	$\text{S}_2\text{O}_3^{2-}$
azide	N_3^-	tetrathionate	$\text{S}_4\text{O}_6^{2-}$

Acids and their Anions

hydrochloric acid	$\text{HCl}(\text{aq})$	chloride ion	Cl^-
hydrobromic acid	$\text{HBr}(\text{aq})$	bromide ion	Br^-
hydroiodic acid	$\text{HI}(\text{aq})$	iodide ion	I^-
nitric acid	HNO_3	nitrate ion	NO_3^-
nitrous acid	HNO_2	nitrite ion	NO_2^-
sulfuric acid	H_2SO_4	sulfate ion	SO_4^{2-}
sulfurous acid	H_2SO_3	sulfite ion	SO_3^{2-}
phosphoric acid	H_3PO_4	phosphate ion	PO_4^{3-}
perchloric acid*	HClO_4	perchlorate ion*	ClO_4^-
chloric acid*	HClO_3	chlorate ion*	ClO_3^-
chlorous acid*	HClO_2	chlorite ion*	ClO_2^-
hypochlorous acid*	HClO	hypochlorite ion*	ClO^-

* Analogous series of oxoacids and their anions exist for the other halogens.