

IMPORTANT POLYATOMIC IONS

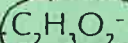
1+

ammonium



1-

acetate



amide



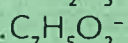
azide



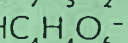
hydrazide



benzoate



bitartrate



bromate



perchlorate



chlorate



chlorite



hypochlorite



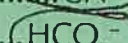
cyanate



cyanide



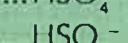
hydrogen carbonate or bicarbonate



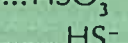
hydrogen sulfate or bisulfate



hydrogen sulfite or bisulfite



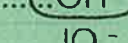
hydrosulfide or bisulfide



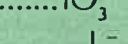
hydroxide



iodate



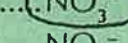
triiodide



nitrate



nitrite

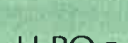


permanganate

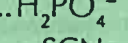


monobasic phosphate or

dihydrogen phosphate



thiocyanate



2-

carbonate



chromate



dichromate



dibasic phosphate or

hydrogen phosphate



disulfate or pyrosulfate



manganate



oxalate



peroxide



metasilicate



sulfate



sulfite



thiosulfate



tartrate



tetraborate



3-

(all are of the ortho form)

aluminate



arsenate



arsenite



borate



citrate



ferricyanide



phosphate or

tribasic phosphate



phosphite



4-

ferrocyanide



silicate (ortho)



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Table 4-3

Oxidation Numbers of Common Monatomic Ions				
1+	2+	3+	4+	
cesium, Cs ⁺ copper(I), Cu ⁺ hydrogen, H ⁺ lithium, Li ⁺ potassium, K ⁺ rubidium, Rb ⁺ silver, Ag ⁺ sodium, Na ⁺ thallium(I), Tl ⁺	barium, Ba ²⁺ cadmium, Cd ²⁺ calcium, Ca ²⁺ cobalt(II), Co ²⁺ copper(II), Cu ²⁺ iron(II), Fe ²⁺ lead(II), Pb ²⁺	magnesium, Mg ²⁺ manganese(II), Mn ²⁺ mercury(II), Hg ²⁺ nickel(II), Ni ²⁺ strontium, Sr ²⁺ tin(II), Sn ²⁺ zinc, Zn ²⁺	aluminum, Al ³⁺ bismuth(III), Bi ³⁺ cerium(III), Ce ³⁺ chromium(III), Cr ³⁺ gallium(III), Ga ³⁺ iron(III), Fe ³⁺	germanium(IV), Ge ⁴⁺ lead(IV), Pb ⁴⁺ silicon(IV), Si ⁴⁺ thorium(IV), Th ⁴⁺ tin(IV), Sn ⁴⁺ zirconium(IV), Zr ⁴⁺
1-	2-	3-	4-	
bromide, Br ⁻ chloride, Cl ⁻ fluoride, F ⁻ hydride, H ⁻ iodide, I ⁻	oxide, O ²⁻ selenide, Se ²⁻ sulfide, S ²⁻ telluride, Te ²⁻	nitride, N ³⁻ phosphide, P ³⁻	carbide, C ⁴⁻	

Charges of Common Polyatomic Ions*		
1+		
ammonium, NH ₄ ⁺		
1-	2-	3-
acetate, C ₂ H ₃ O ₂ ⁻ chlorate, ClO ₃ ⁻ cyanide, CN ⁻ hydroxide, OH ⁻ hypochlorite, ClO ⁻ iodate, IO ₃ ⁻ nitrate, NO ₃ ⁻ nitrite, NO ₂ ⁻ perchlorate, ClO ₄ ⁻	carbonate, CO ₃ ²⁻ hexafluorosilicate, SiF ₆ ²⁻ oxalate, C ₂ O ₄ ²⁻ selenate, SeO ₄ ²⁻ silicate, SiO ₃ ²⁻ sulfate, SO ₄ ²⁻ tartrate, C ₄ H ₄ O ₆ ²⁻	arsenate, AsO ₄ ³⁻ phosphate, PO ₄ ³⁻

*Table A-4 of the Appendix lists additional polyatomic ions and their charges

Table A-4

Major Formal Oxidation States of Polyatomic Ions			
1-	2-	3-	4-
Azide, N ₃ ⁻ Benzoate, C ₇ H ₅ O ₂ ⁻ Bromate, BrO ₃ ⁻ Chlorate, ClO ₃ ⁻ Formate, CHO ₂ ⁻ Hypophosphite, PH ₂ O ₂ ⁻ Metaphosphate, PO ₃ ⁻ Nitrite, NO ₂ ⁻ Periodate, IO ₄ ⁻ Permanganate, MnO ₄ ⁻ Peroxyborate, BO ₃ ⁻ Thiocyanate, SCN ⁻ Vanadate, VO ₃ ⁻	Chromate, CrO ₄ ²⁻ Dichromate, Cr ₂ O ₇ ²⁻ Hexachloroplatinate(IV), PtCl ₆ ²⁻ Molybdate, MoO ₄ ²⁻ Peroxide, O ₂ ²⁻ Peroxydisulfate, S ₂ O ₈ ²⁻ Sulfite, SO ₃ ²⁻ Tellurate, TeO ₄ ²⁻ Tetraborate, B ₄ O ₇ ²⁻ Thiosulfate, S ₂ O ₃ ²⁻ Tungstate, WO ₄ ²⁻	Arsenite, AsO ₃ ³⁻ Citrate, C ₆ H ₅ O ₇ ³⁻ Hexacyanoferrate(III), Fe(CN) ₆ ³⁻	Hexacyanoferrate(II), Fe(CN) ₆ ²⁻ Pyrophosphate, P ₄ O ₇ ⁴⁻