

Chemistry Reference Sheet

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1A	2A	3B	4B	5B	6B	7B	8B	9B	10B	11B	12B	3A	4A	5A	6A	7A	8A
1 H Hydrogen 1.01	2 He Helium 4.00	3 Li Lithium 6.94	4 Be Beryllium 9.01	5 B Boron 10.81	6 C Carbon 12.01	7 N Nitrogen 14.01	8 O Oxygen 16.00	9 F Fluorine 19.00	10 Ne Neon 20.18	11 Na Sodium 22.99	12 Mg Magnesium 24.31	13 Al Aluminum 26.98	14 Si Silicon 28.09	15 P Phosphorus 30.97	16 S Sulfur 32.07	17 Cl Chlorine 35.45	18 Ar Argon 39.95
19 K Potassium 39.10	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.87	23 V Vanadium 50.94	24 Cr Chromium 52.00	25 Mn Manganese 54.94	26 Fe Iron 55.85	27 Co Cobalt 58.93	28 Ni Nickel 58.69	29 Cu Copper 63.55	30 Zn Zinc 65.39	31 Ga Gallium 69.72	32 Ge Germanium 72.61	33 As Arsenic 74.92	34 Se Selenium 78.96	35 Br Bromine 79.90	36 Kr Krypton 83.80
37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91	46 Pd Palladium 106.42	47 Ag Silver 107.87	48 Cd Cadmium 112.41	49 In Indium 114.82	50 Sn Tin 118.71	51 Sb Antimony 121.76	52 Te Tellurium 127.60	53 I Iodine 126.90	54 Xe Xenon 131.29
55 Cs Cesium 132.91	56 Ba Barium 137.33	57 La Lanthanum 138.91	72 Hf Hafnium 178.49	73 Ta Tantalum 180.95	74 W Tungsten 183.84	75 Re Rhenium 186.21	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.97	80 Hg Mercury 200.59	81 Tl Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.98	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
87 Fr Francium (223)	88 Ra Radium (226)	89 Ac Actinium (227)	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh Bohrium (264)	108 Hs Hassium (269)	109 Mt Meitnerium (268)	110 Ds Darmstadtium (281)	111 Rg Roentgenium (280)	112 Cn Copernicium (285)	113 Nh Nihonium (286)	114 Fl Flerovium (289)	115 Mc Moscovium (289)	116 Lv Livermorium (293)	117 Ts Tennessine (294)	118 Og Oganesson (294)

Key

11	—	Atomic number
Na	—	Element symbol
Sodium	—	Element name
22.99		

Average atomic mass*

* If this number is in parentheses, then it refers to the atomic mass of the most stable isotope.

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Common Ions

Memorize this stuff NOW!

Pop quizzes all year long!

+++ **Positive Ions** +++

1+	2+	3+	4+
Ammonium, NH_4^+ Copper(I), Cu^+ (<i>Cuprous</i>) Silver, Ag^+ Gold (I), Au^+ And all elements in Group 1A	Cadmium, Cd^{2+} Chromium(II), Cr^{2+} Cobalt(II), Co^{2+} Copper(II), Cu^{2+} (<i>Cupric</i>) Iron(II), Fe^{2+} (<i>Ferrous</i>) Lead(II), Pb^{2+} (<i>Plumbous</i>) Manganese(II), Mn^{2+} Mercury(II), Hg^{2+} (<i>Mercuric</i>) Nickel(II), Ni^{2+} Tin(II), Sn^{2+} (<i>Stannous</i>) Zinc, Zn^{2+} Mercury(I), Hg_2^{2+} (<i>Mercurous</i>) And all elements in Group 2A	Chromium(III), Cr^{3+} Cobalt(III), Co^{3+} Gold(III), Au^{3+} Iron(III), Fe^{3+} (<i>Ferric</i>) Manganese(III), Mn^{3+} Nickel(III), Ni^{3+} Boron, B^{3+} Aluminum, Al^{3+} Gallium, Ga^{3+} Indium, In^{3+}	Lead(IV), Pb^{4+} (<i>Plumbic</i>) Manganese(IV), Mn^{4+} Silicon(IV), Si^{4+} Tin(IV), Sn^{4+} (<i>Stannic</i>) And Group 4A can potentially make 4+ if under right circumstances

--- **Negative Ions** ---

1-	2-	3-	4-
Acetate, $\text{C}_2\text{H}_3\text{O}_2^-$ Bicarbonate, HCO_3^- Chlorate, ClO_3^- Chlorite, ClO_2^- Cyanide, CN^- Hydride, H^- Hydroxide, OH^- Hypochlorite, ClO^- Nitrate, NO_3^- Nitrite, NO_2^- Perchlorate, ClO_4^- Permanganate, MnO_4^- Thiocyanate, SCN^- And all elements in Group 7A (Halogens)	Carbonate, CO_3^{2-} Peroxide, O_2^{2-} Sulfate, SO_4^{2-} Sulfite, SO_3^{2-} Chromate, CrO_4^{2-} Dichromate, $\text{Cr}_2\text{O}_7^{2-}$ Oxalate, $\text{C}_2\text{O}_4^{2-}$ Thiosulfate, $\text{S}_2\text{O}_3^{2-}$ And all elements in Group 6A	Borate, BO_3^{3-} Phosphate, PO_4^{3-} Phosphide, P^{3-} Phosphite, PO_3^{3-} Arsenate, AsO_4^{3-} And all elements in Group 5A	Carbide, C^{4-} And Group 4A can potentially make 4- if under right circumstances

Prefixes		Common Molecular Gases	Common Acids	Diatomic Elements	
One- mono	Six – hexa	F_2 , Cl_2 , H_2 , N_2 , O_2 , SO_2 , SO_3 , CO , CO_2 , H_2S , NO , NO_2 , NH_3 , P_2O_3 , P_2O_5 , SiF_4 , HCl , HBr , HI , HF , N_2O_5 , N_2O_3 , N_2O	Hydrochloric acid HCl	Hydrogen	H_2
Two- di	Seven – hepta		Sulfuric acid H_2SO_4	Nitrogen	N_2
Three- tri	Eight – octa		Nitric HNO_3	Oxygen	O_2
Four – tetra	Nine – nona		Phosphoric H_3PO_4	Flourine	F_2
Five- penta	Ten - deca			Chlorine	Cl_2
				Bromine	Br_2
				Iodine	I_2
			Common Base		
			Ammonia NH_3		

Polyatomic Ions Containing Oxygen**		Acid Nomenclature*	
Per-.....-ate	Greatest number of oxygens	Per-.....-ic	Greatest number of oxygen atoms
.....-ate	Greater	-ic	Greater
.....-ite	Smaller	-ous	Smaller
Hypo.....-ite	Smallest number of oxygens	Hypo.....-ous	Smallest number of oxygen atoms

*Acids- Acids are molecular compounds that contain hydrogen bonded to a nonmetal to a group of atoms that behave like a nonmetal. Acids can be either binary or ternary compounds. The names of binary acids have the form Hydro- -ic acids. The names of ternary acids use a series of prefixes and suffixes to specify the relative number of oxygen atoms in the molecule.

**Names of polyatomic ions containing oxygen- some elements form several polyatomic ions with oxygen. A series of suffixes and prefixes is used to specify the relative number of oxygen atoms.