

# INDEX

## L: Notation of Ligand(s) in the Coordination Formula(s)

**Ac**, *see* Actinium

Acetate, K 365;  $\text{NH}_4^+$  475; Na 515; Pb 624; Sr 801

Acetylene 105

Acetylide, Au 45; Ba 65; Ca 112; Cu 197; Li 414;  
Mg 433; Na 515; Sr 800

Acid

arsenic 274

azoic, hydro- 287

boric, meta- 275

bromic 276; hydro- 275; per- 276

bromous, hypo- 275

carbonic 278

chloric 281; hydro- 279; per- 282

chlorous *and* hypo- 280

chromic, di-, *and* isopoly- 176

cyanic 297; hydro- 277; thio- 288

fluoric, hydro- 283

germanic 267

iodic 285; hydro- 284; metaper- *and*  
orthoper- 286

iodous, hypo- 285

manganic, per- 287

molybdenic 463

nitric *and* ortho- 290

nitrous 289; hypo- 293

phosphinic 298

phosphonic 298

phosphonous 298

phosphoric, di- 302; meta- 299; ortho- 300

phosphorous-phosphoric 301

rhenic, diper- *and* per- 303

selenic 314

selenious 313

silicic, di-, meta-, *and* ortho- 785

stannic 795

sulfonic, amino-, chloro- *and* fluoro- 310

sulfuric 306; di- 309; hydro- 303;  
peroxodi- *and* peroxomono- 311;  
thio- 312

sulfurous 741

technetic per- 316

telluric, allo- *and* ortho- 317

tellurous 316

thionic, di- 308; poly- 309

wolframic 881

Actinium (Ac) 1-3

**Ag**, *see* Silver

**Al**, *see* Aluminum

Aluminate

chloro- (L) 20; fluoro- (L) 21;

hydrido- (L) 22; hydroxo- (L) 26

oxo-, Li 413; Na 509

Aluminum (Al) 16-28, 77, 111, 151, 183, 363, 432,  
509, 693

**Am**, *see* Americium

Amalgam 326

Americium (Am) 29-30

Amide, Ba 70; Cs 188; K 386; Li 422;  $\text{NO}_2^+$  504;

Na 537; Ni 579; P 613; 617; Rb 697; S 740

Ammonia 471, 473; deuterio- 470

Ammonium

( $\text{NH}_4^+$ ) 23, 175, 242, 257, 360, 437, 473,

- Ammonium (*Cont.*):  
 474–492, 538, 868  
 deuterio- 470  
 Anatase 834  
 Antimony  
 (Sb) 16, 440, 746–760  
 (Sb<sup>-</sup>), Ga 260; In 353; Mg 440; Ni 584; Zn 906  
 black, explosive, and yellow 746  
 Aqua regia 279, 290  
 Ar, *see* Argon  
 Argentate, cyano- (L) 6  
 Argon (Ar) 30–31  
 Arsenate  
 (AsO<sub>4</sub><sup>3-</sup>, HAsO<sub>4</sub><sup>2-</sup>, H<sub>2</sub>AsO<sub>4</sub><sup>-</sup>), Ag 5; Al 18;  
 Ba 65; Bi 86; Ca 111; Co 151; Cu 196;  
 Fe 227; Hg 327; Mg 437; NH<sub>4</sub><sup>+</sup> 437;  
 Na 511, 525; Ni 574; Pb 624  
 fluoro- (L) 35  
 oxo- 511  
 thio- (L) 41  
 Arsenic  
 (As) 31–42, 227  
 black, grey, and yellow 31  
 Arsenide, Al 18; Ca 111; Cd 126; Fe 227; Ga 256;  
 In 349; Mg 432; Na 574; Zn 898  
 Arsenite, meta- 510; ortho- 5  
 Arsine 36  
 As, *see* Arsenic  
 Astatine (At) 42–43  
 At, *see* Astatine  
 Au, *see* Gold  
 Aurate, chloro- (L) 46, 47; cyano- (L) 45;  
 thiosulfato- (L) 50  
 Azide, Cs 188; Cu 202; H 287; K 385; Li 421;  
 NH<sub>4</sub><sup>+</sup> 485; N<sub>2</sub>H<sub>3</sub><sup>+</sup> 495; Na 536; Pb 629;  
 Rb 697
- B**, *see* Boron  
**Ba**, *see* Barium  
 Barium (Ba) 63–76  
**Be**, *see* Beryllium  
 Berkelium (Bk) 95  
 Beryllate, fluoro- (L) 80, 81  
 Beryllium (Be) 76–85  
**Bi**, *see* Bismuth  
 Bismuth (Bi) 85–95; (Bi<sup>-</sup>) 432  
 Bismuthate, meta- and ortho- 513  
**Bk**, *see* Berkelium  
 Black, Pd 636; Pt 652; Rh 715  
 Bohrium (Bo) 588  
 Borane, deca-, di-, penta-, and tetra- 55–56  
 Borate  
 fluoro- (L) 53–55; hydrido- (L) 56–58;  
 hydroxo- and hydroxo-fluoro- (L) 62  
 meta-, Ca 111; K 364; Li 413; Na 512  
 oxopenta- 512  
 tetra-, Li 414; Na 512  
 Borazine 58; trichloro- 59  
 Boride 827  
 Boron  
 (B) 50–63  
 ammine-fluoro- (L) 60  
 aqua-fluoro- (L) 59  
**Br**, *see* Bromine  
 Bromate  
 (BrO<sub>3</sub><sup>-</sup>), Ag 6; Ba 65; Cs 184; Hg 328; K 364;  
 Na 514; Pb 624; Rb 694  
 bromo- and chloro- (L) 98; fluoro- (L) 99;  
 oxo-fluoro- (L) 101  
 per- 365  
 Bromide, Ac 1; Ag 5; Al 18; As 33; Au 44; B 51;  
 Ba 65; Be 77; Bi 86, 87; C 103, 105; Ca  
 111; Cd 126; Ce 133; Co 151; Cr 167; Cs  
 184; Cu 196; D 210; Fe 227; 228; Ge 264;  
 H 275; Hf 319; Hg 327, 328; I 343; K 364;  
 Li 414; Mg 432; Mn 443; Mo 459;  
 NH<sub>4</sub><sup>+</sup> 474; NO<sup>-</sup> 500; Na 514; Nb 567;  
 Ni 574; P 603, 604, 616; Pa 618; Pb 624;  
 Pd 637; Po 647, 648; Pt 653, 654, 686;  
 Rb 693; Re 704; S 730, 731; Sb 747;  
 Se 767; Si 772; Sn 791, 792; Ta 807, 808;  
 Te 819; Th 822; Ti 827; U 848, 849; V 862,  
 871; W 878; Zn 898; Zr 908  
 Bromine (Br) 95–101  
 Brookite 834
- C**, *see* Carbon  
**Ca**, *see* Calcium  
 Cadmate, cyano- (L) 126  
 Cadmium (Cd) 125–132  
 Cadmiumantimony 132  
 Calcium (Ca) 110–125  
 Californium (Cf) 139–140  
 Carbamate 486  
 Carbide, Al 19; B 51; Be 77; Ce 133; Fe 228; Hf 319;  
 Mg 433; Nb 567; Ni 575; Si 772; Ta 808;  
 Ti 828; U 849; V 862, 863; W 878; Zr 908  
 Carbon (C) 101–110  
 Carbonate  
 (CO<sub>3</sub><sup>2-</sup>, HCO<sub>3</sub><sup>-</sup>), Ag 7; Ba 65; Be 78; Bi 87;  
 Ca 113, 118; Cd 127; Co 151; Cs 184, 187;  
 Cu 197; Fe 232; Hg 329; K 365, 375;  
 Li 415; Mg 118, 433; Mn 443; NH<sub>4</sub><sup>+</sup> 475,  
 479; Na 516, 517, 525; Ni 576; Pb 625;  
 Ra 692; Rb 694, 696; Sr 801; Ti 839;  
 U 856; Zn 898  
 oxo-peroxo- 368  
 Carbyne 102  
**Cd**, *see* Cadmium

- Ce**, *see* Cerium  
**Cerate, nitrate-** (L) 135  
**Cerium (Ce)** 132–139  
**Cesium (Cs)** 183–193  
**Cf**, *see* Californium  
**Chloramine** 495  
**Chlorate**  
 (ClO<sub>3</sub><sup>-</sup>), Ag 8; Ba 66; Ca 115; Cs 186; K 368;  
 Li 417; NH<sub>4</sub><sup>+</sup> 477; Na 520; Rb 695  
 per-, Ag 8; Al 20; Ba 67; Cr 172; Cs 186;  
 Cu 200; Fr 255; K 369; Li 417; Mg 435;  
 NH<sub>4</sub><sup>+</sup> 477; N<sub>2</sub>H<sub>5</sub><sup>+</sup> 495; NH<sub>3</sub>OH<sup>+</sup> 498;  
 NO<sup>+</sup> 501; Na 520; Rb 695  
**Chloride**, Ac 1, 2; Ag 7; Al 19; Am 30; As 33, 34;  
 Au 45–47; B 52, 53; Ba 65; Be 78; Bi 87,  
 88; Br 98; C 103–105, 109; Ca 113;  
 Cd 127; Ce 133; Cf 140; Cm 149; Co 153;  
 Cr 168–172; Cs 185; Cu 198, 199; D 211;  
 Dy 214; Er 216; Eu 219, 220; Fe 235–238;  
 Ga 256; Gd 261; Ge 264; H 279; Hf 319,  
 320; Hg 329, 330; Ho 339; I 343, 344;  
 In 349, 350; Ir 354, 355; K 368, 382;  
 La 409; Li 415; Lu 429; Mg 382, 434;  
 Mn 445; Mo 460, 461; NH<sub>4</sub><sup>+</sup> 470, 476;  
 N<sub>2</sub>H<sub>5</sub><sup>+</sup> 495; N<sub>2</sub>H<sub>7</sub><sup>2+</sup> 496; NH<sub>3</sub>OH<sup>+</sup> 497;  
 NO<sup>+</sup> 500; NO<sub>2</sub><sup>+</sup> 503; Na 517; Nb 567, 568;  
 Nd 571; Ni 577; Np 587; Os 595; P 604–  
 607, 611, 616; Pa 618; Pb 625–627; Pd 637;  
 Pm 646; Po 648; Pr 649; Pt 661, 662, 687;  
 Pu 690; Ra 692; Rb 694; Re 705–707;  
 Rh 717; Ru 723, 724; S 732–737; Sb 748–  
 750; Sc 761; Se 767; Si 773; Sm 788;  
 Sn 792, 793; Sr 801; Ta 808; Tb 811;  
 Te 814, 815; Th 822; Ti 828–831;  
 Tl 840; Tm 846; U 849–851, 856; V 863–  
 866, 871, 872; W 879, 880; Xe 884; Y 889;  
 Yb 894; Zn 899; Zr 908, 909  
**Chlorine**  
 (Cl) 140–148  
 fluoro- 55; oxo- 752  
**Chlorite**  
 (ClO<sub>2</sub><sup>-</sup>), Na 519; Pb 627  
 hypo-, Ca 114; Li 416; NO<sub>2</sub><sup>+</sup> 504; Na 518  
**Chromate**  
 (CrO<sub>4</sub><sup>2-</sup>), Ag 8; Ba 67; Ca 115; Cs 186; K 370;  
 Li 417; Mg 435; NH<sub>4</sub><sup>+</sup> 477; Na 521; Pb 627;  
 Rb 695; Sr 802; Tl 841  
 di-, Ag 9; Ba 67; Cs 186; K 371; Li 418;  
 NH<sub>4</sub><sup>+</sup> 477; Na 521; Rb 695; Sr 802; Tl 841  
 chloro-oxo- (L) 172; cyano- (L) 167;  
 hydroxo- (L) 180  
 oxotetra- and oxotri- 372  
 peroxy- (L) 178, 179; thio- (L) 181;  
 thiocyanato- (L) 174  
**Chromium**  
 (Cr) 116, 165–183, 186, 372, 436, 695  
 ammine- (L) 174, 175; ammine-chloro- (L) 175;  
 benzene-, carbonyl, and cyclopentadienyl-  
 (L) 167; trifluorophosphorus- (L) 181  
**Cl**, *see* Chlorine  
**Cm**, *see* Curium  
**Co**, *see* Cobalt  
**Cobalt**  
 (Co) 149–165, 370  
 ammine- (L) 157; ammine-chloro- (L) 158; car-  
 bonyl- (L) 152, 153; cyclopentadienyl-  
 (L) 151  
 Cobaltate, cyano- (L) 151; nitro- (L) 159  
 Coesite 784  
**Copper**  
 (Cu) 193–210, 239, 333  
 ammine- (L) 202, 203  
**Cr**, *see* Chromium  
**Cristobalite** 784  
**Cs**, *see* Cesium  
**Cu**, *see* Copper  
**Curium (Cm)** 148–149  
**Cyanamide**, Ca 112; H 278  
**Cyanate**  
 (NCO<sup>-</sup>, OCN<sup>-</sup>), H 297; K 391; NH<sub>4</sub><sup>+</sup> 487;  
 Na 543; Si 783, 786  
 thio-, Ag 11; Cu 202; H 288; Hg 333; K 385;  
 NH<sub>4</sub><sup>+</sup> 485; Na 537; Pb 629; Tl 841  
**Cyanide**, Ag 6; Au 45; Ba 65; Ca 113; Cd 126;  
 Cu 197; Ge 264; H 277; Hg 328; K 365;  
 NH<sub>4</sub><sup>+</sup> 475; Na 515; Ni 575; P 604; Pd 637;  
 Zn 898  
**Cyanogen**  
 (CN<sup>·</sup>, C<sub>2</sub>N<sub>2</sub>) 105  
 thio- 731  
 Cyclopentadienide, Mg 433; Tl 839  
**D**, *see* Deuterium  
**Deuterium (D)** 210–213, 282, 470  
**Diamond** 102  
**Dubnium (Db)** 408  
**Dy**, *see* Dysprosium  
**Dysprosium (Dy)** 213–215  
**Einsteinium (Es)** 218  
**Er**, *see* Erbium  
**Erbium (Er)** 216–218  
**Es**, *see* Einsteinium  
**Eu**, *see* Europium  
**Europium (Eu)** 218–222  
**F**, *see* Fluorine  
**Fe**, *see* Iron  
**Fermium (Fm)** 254

**Ferrate**(FeO<sub>4</sub><sup>2-</sup>), Ba 68; K 374aqua-chloro- (L) 240; cyano- (L) 229–232;  
nitrosylium-cyano- (L) 244, 245; oxalato-  
(L) 232

oxo- 523

thio- (L) 251

**Ferrochrome** 166**Ferromanganese** 442**Ferromolybdenum** 458**Ferriobium** 566**Ferrosilicon** 770**Ferrotitanium** 826**Ferrovandium** 861**Ferrotungsten** 877**Ferrozirconium** 907**Fluoride**(F<sup>-</sup>), Ac 2, 3; Ag 9; Al 21; Am 30; As 34,  
39; Au 47, 48; B 53; Ba 67; Be 79; Bi 88,  
89, 92; Br 98–101; C 104, 105, 108;  
Ca 116; Cd 128, Ce 134; Cl 143, 144, 147,  
148; Cm 149; Co 155, 156; Cr 172, 173,  
179; Cs 186; Cu 200; D 211; Dy 214;  
Er 217; Eu 220; Fe 239; Ga 257; Gd 261;  
Ge 265, 266; H 283; Hf 321; Hg 330, 331;  
Ho 339; I 345–348; In 350; Ir 358, 359;  
K 373; Kr 407; La 409; Li 418; Lu 430;  
Mg 436; Mn 446, 447, 452; Mo 461, 462,  
464, 465; N 470, 471, 507; NH<sub>4</sub><sup>+</sup> 478;  
NO<sup>+</sup> 501; NO<sub>2</sub><sup>+</sup> 504; Na 522; Nb 568;  
Nd 571; Ni 578; Np 587; O 592; Os 596,  
597, 599; P 604, 606, 608, 614; Pa 619;  
Pb 627, 628; Pd 640; Pr 649; Pt 672, 673;  
Pu 690, 691; Rb 695; Re 708, 709, 713,  
714; Rh 719; Ru 724–726; S 731, 735, 737,  
738, 740, 744, 745; Sb 751; Sc 762; Se 768,  
770; Si 775; Sm 789; Sn 794; Sr 802;  
Ta 808; Tb 812; Tc 815, 816; Te 819;  
Th 822; Ti 832, 835; Tl 841; Tm 846;  
U 851–853, 857; V 867, 873; W 880, 883;  
Xe 884–886, 888; Y 890; Yb 895; Zn 900;  
Zr 910hydrogendi-, K 376; NH<sub>4</sub><sup>+</sup> 479; Na 526**Fluorine (F)** 222–224**Fm**, *see* Fermium**Fr**, *see* Francium**Francium (Fr)** 254–255**Fullerene** 102**Ga**, *see* Gallium**Gadolinium (Gd)** 260–262**Gallate, chloro- (L)** 257**Gallium (Ga)** 187, 255–260**Galliumantimony** 260**Gas, noble** 30, 318, 407, 573, 721, 883**Gd**, *see* Gadolinium**Ge**, *see* Germanium**Gel, silica** 785**Germanate**(GeO<sub>3</sub><sup>2-</sup>), K 375; Li 419; Na 523

fluoro- (L) 266

**Germane, poly-** 266**Germanium (Ge)** 263–269**Glass**

liquid 404, 559

quartz 783

**Gold (Au)** 43–50

colloidal 44

**Graphite** 102**H**, *see* Hydrogen**Hafnate, fluoro- (L)** 322**Hafnium (Hf)** 318–325, 803**Hahnium (Hn)** 588**Hardness**

carbonate (temporary) 113, 433–434

sulfate (permanent) 124, 439

**He**, *see* Helium**Helium (He)** 318**Hf**, *see* Hafnium**Hg**, *see* Mercury**Ho**, *see* Holmium**Holmium (Ho)** 338–340**Hydrate**

ammonia 473

cobalt oxide 162

hydrazine 493

iron oxide 247

platinum oxide 684

silicon oxide 785

**Hydrazine** 492, 493**Hydrazinium (N<sub>2</sub>H<sub>7</sub><sup>+</sup>, N<sub>2</sub>H<sub>8</sub><sup>2+</sup>)** 494–495**Hydride**, Ba 68; Be 81; Ca 116; Cs 187; Cu 201;  
K 375; Li 419; Na 524; Nb 569; Pu 691;  
Rb 696; Sr 802; Ta 810; Ti 832; U 854;  
Y 890; Zr 911**Hydrogen**

(H) 269–317

deuterio- 282

nascent *and* natural 272**Hydroxide**(OH<sup>-</sup>), Ac 3; Al 25; Am 30; B 61; Ba 72; Be 83;  
Bi 87, 91, 92; Ca 121; Cd 130; Ce 135,  
137; Co 161; Cr 179; Cs 191; Cu 197, 206;  
Dy 215; Er 217; Eu 221; Fe 247; Ga 259;  
Hf 324; Ho 340; I 285; In 351; K 391;  
La 411; Li 425; Lu 430; Mg 439; Mn 452;  
Mo 465; Na 543; Nd 572; Ni 582; Np 587;  
Os 597; P 298; Pa 621; Pb 625, 632;  
Pd 645; Pm 646; Pr 651; Pt 684; Pu 691;  
Rb 700; Re 714; Sc 763; Sm 789; Sn 795,  
796; Sr 804; Tc 816; Th 824; Ti 835;

Hydroxide (*Cont.*):

Tl 844; U 857, 858; V 873; Xe 889; Y 892;  
Zn 903; Zr 913

ion 293

meta-, Al 26; Au 49; Bi 93; Co 162; Cr 181;  
Fe 248; Ga 259; Mn 453; Ni 582; Sc 764;  
V 873

ammonium 473

Hydroxylamine 496

Hydroxylaminium (NH<sub>3</sub>OH<sup>+</sup>) 497–498

I, *see* Iodine

Imide, Li 422; P 613; S 740

In, *see* Indium

Indium (In) 348–353

Indiumantimony 353

Iodate

(IO<sub>3</sub><sup>-</sup>), Ag 10; Ba 69; Cd 128; Cs 187; I 348;  
K 381; NH<sub>4</sub><sup>+</sup> 483; Na 532; Ni 579; Pb 629;  
Rb 696

bromo- (L) 343; chloro- (L) 344, 345;  
iodo- (L) 346

metaper-, Cs 188; I 348; K 381; Na 533; Rb 697

orthoper- (IO<sub>6</sub><sup>5-</sup>, H<sub>2</sub>IO<sub>6</sub><sup>3-</sup>) 526, 533

oxodi- 286

Iodide, Ag 9; Al 22; As 36, 37; Au 48; B 59; Ba 69;  
Be 81; Bi 89, 90; C 105; Ca 118; Cd 128;  
Ce 134; Co 156; Cr 174; Cs 187; Cu 201;  
D 211; Fe 241; Ge 267; H 284; Hf 322;  
Hg 331, 332; K 380; Li 420; Mn 447;  
Mo 462; NH<sub>4</sub><sup>+</sup> 483; Na 531; Nb 569;  
Ni 579; P 611, 612; Pa 620; Pb 628; Pd 641;  
Pt 676, 687; Rb 696; Re 711; Sb 753;  
Si 782; Sn 795; Ta 810; Te 819; Th 823;  
Ti 832, 833; U 854; V 868; W 881; Zn 900;  
Zr 911

Iodine

(I) 340–348

oxo- 348

Ir, *see* Iridium

Iridate, chloro- (L) 356–358

Iridium

(Ir) 353–362

ammine- (L) 360; carbonyl- (L) 354

colloidal 353

Iron

(Fe) 116, 166, 174, 186, 224–254, 375, 436,  
442, 447, 458, 566, 696, 770, 826, 832,  
861, 877, 907

aqua-chloro- (L) 240; carbonyl- (L) 233, 234;  
cyclopentadienyl- (L) 229; nitrosyl- (L) 244;  
trifluorophosphorus- (L) 249

Joliotium (Jl) 588

K, *see* Potassium

Keatite 784

Kr, *see* Krypton

Krypton (Kr) 407

Ku, *see* Kurchatovium

Kurchatovium (Ku) 407–408

La, *see* Lanthanum

Lanthanum (La) 408–412

Lawrencium (Lr), 428

Lead (Pb) 622–636, 836

Lechatelierite 784

Li, *see* Lithium

Liquor, ammonia 471, 473

Lithium (Li) 412–428

Lr, *see* Lawrencium

Lu, *see* Lutetium

Lutetium (Lu) 429–431

Magnesium (Mg) 118, 382, 431–440

Magnesium-antimony 440

Magnesium-bismuth 432

Manganate

(MnO<sub>4</sub><sup>2-</sup>), Ba 69; K 384; Na 534

oxo- 535

per-, Ag 10; Ba 69; Cs 188; K 382; Li 421;  
NH<sub>4</sub><sup>+</sup> 483; Na 533; Rb 697

Manganese

(Mn) 188, 441–457, 833

carbonyl- and carbonyl-bromo- (L) 444;  
carbonyl-iodo- (L) 445; cyclopentadienyl-  
(L) 443; hydrogen-carbonyl- (L) 447

Md, *see* Mendelevium

Meitnerium (Mt) 588

Melanophlogite 784

Mendelevium (Md) 431

Mercurate, iodo- (L) 332, 333

Mercury (Hg) 325–338

Metal, noble 4, 44, 195, 326, 353, 593, 636, 652,  
715, 722

Methane 104

Mg, *see* Magnesium

Mirror, antimony 753; arsenic 36; silver 11, 12

Mn, *see* Manganese

Mo, *see* Molybdenum

Molybdate

(MoO<sub>4</sub><sup>2-</sup>), Ba 70; Ca 118; Cd 128; K 384;

Li 421; NH<sub>4</sub><sup>+</sup> 484; Na 535; Pb 629; Sr 803

cyano- (L) 459

oxohepta- 484

Molybdenum

(Mo) 457–466

carbonyl- (L) 459; trifluorophosphorus- (L) 465

Molybdophosphate 612

Molibdosilicate 782

N, *see* Nitrogen

Na, *see* Sodium

Nb, *see* Niobium

Nd, *see* Neodymium

Ne, *see* Neon

Neodymium (Nd) 570–573

Neon (Ne) 573

Neptunium (Np) 585–587

Neptunyl 587

NH<sub>4</sub><sup>+</sup>, *see* Ammonium

N<sub>2</sub>H<sub>5</sub><sup>+</sup>, *see* Hydrazinium

N<sub>2</sub>H<sub>6</sub><sup>2+</sup>, *see* Hydrazinium

NH<sub>2</sub>OH<sup>+</sup>, *see* Hydroxylaminium

Ni, *see* Nickel

Niccolate, cyano- (L) 575; fluoro- (L) 579

Nickel

(Ni) 245, 573–585

ammine- (L) 579; carbonyl- (L) 576;  
cyclopentadienyl- (L) 575; trifluorophospho-  
rus- (L) 583

Nickelantimony 584

Nielsbohrium (Ns) 587–588

Niobate, fluoro- (L) 568

Niobium

(Nb) 424, 540, 566–570

chloro- (L) 568

Nitrate, Ac 2; Ag 12; Al 24; Am 30; Ba 70; Be 81;  
Bi 90, 91; Br 100; Ca 119; Cd 128; Ce 134,  
135; Co 160; Cr 175, 176; Cs 188; Cu 203;  
Dy 215; Er 217; Eu 220; Fe 243; Ga 257;  
Gd 261; Hf 323; Hg 333, 334; Ho 339;  
I 347; In 350; K 388; La 410; Li 423;  
Mg 438; Mn 448; NH<sub>4</sub><sup>+</sup> 486; N<sub>2</sub>H<sub>5</sub><sup>+</sup> and  
N<sub>2</sub>H<sub>6</sub><sup>2+</sup> 495; NH<sub>2</sub>OH<sup>+</sup> 498; NO<sub>2</sub><sup>+</sup> 506;  
Na 539; Ni 580; Pb 629; Pd 643; Pr 649;  
Pu 691; Ra 692; Rb 697; Rh 720; Sc 762;  
Sm 789; Sn 795; Sr 803; Tb 812; Th 823;  
Ti 834; Tl 842; U 857; Y 891; Yb 895;  
Zn 901

Nitride, Ag 10; Al 23; B 59; Ba 70; Be 81; Ca 119;  
Cl 145; Co 157; Cr 174; Cu 202; Fe 241;  
Ga 257; Ge 267; Hf 323; I 346; In 350;  
Li 422; Mg 437; Mo 461; Ni 579; P 604,  
606, 607, 612, 613; Pu 691; S 739, 740;  
Sc 762; Si 782; Sr 803; Ta 810; Ti 833;  
V 868; Zn 901; Zr 912

Nitrite

(NO<sub>2</sub><sup>-</sup>), Ag 12; Ba 70; Ca 119; Cs 188; Hg 333;  
K 387; Li 423; NH<sub>4</sub><sup>+</sup> 486; NO<sup>+</sup> 505;  
Na 538; Rb 697; Sr 803

hypo- 540

Nitrogen (N) 466–507

Nitrosyl (NO<sup>•</sup>) 500–502, 505, 886

Nitryl (NO<sub>2</sub><sup>•</sup>) 503–504, 506

No, *see* Nobelium

NO<sup>•</sup>, *see* Nitrosyl

NO<sub>2</sub><sup>•</sup>, *see* Nitryl

Nobelium (No) 585

Np, *see* Neptunium

Ns, *see* Nielsbohrium

O, *see* Oxygen

Oleum 307, 743

Opal 785

Os, *see* Osmium

Osmate

(OsO<sub>4</sub><sup>2-</sup>) 599

chloro- and chloro-oxo- (L) 596; nitrido-oxo-

(L) 597; oxo-hydroxo- (L) 599

Osmium

(Os) 593–600

carbonyl- (L) 594; carbonyl-chloro- (L) 595;  
cyclopentadienyl- (L) 594

Oxide

(O<sup>2-</sup>, O<sup>-</sup>), Ac 2, 3; Ag 5, 13; Al 24, 77, 111,  
151, 432; Am 30; As 34, 37, 39; Au 47, 48;  
B 60, 63; Ba 71, 76; Be 77, 82; Bi 86–88,  
90–92; Bk 95; Br 100, 101; C 105, 107–  
109; Ca 111, 116, 119, 125; Cd 129;  
Ce 136, 137; Cf 140; Cl 145–148; Cm 149;  
Co 151, 155, 161, 162; Cr 116, 171, 172,  
174, 176–179, 436; Cs 190; Cu 204–206;  
D 211, Dy 215; Er 217; Eu 220, 221;  
Fe 116, 174, 238, 240, 245–247, 254, 436,  
447, 832; Ga 258; Gd 262; Ge 267; Hf 320,  
323, 324, 803; Hg 335; Ho 339; I 347, 348;  
In 351; Ir 360, 361; K 390; La 410; Li 424;  
Lu 430; Mg 432, 436, 438; Mn 447–452,  
457, 833; Mo 461–465; N 498, 502, 505–  
507; Na 540, 541; Nb 424, 540, 568, 569;  
Nd 572; Ni 245, 581, 582; Np 587; Os 597–  
599; P 63, 604, 607, 612–614; Pa 620,  
Pb 630, 631, 633, 635, 836; Pd 644;  
Pm 646; Po 648; Pr 649, 650; Pt 683, 684;  
Pu 691; Rb 699; Re 711–714; Rh 720;  
Ru 725, 726; S 731, 735–737, 740–745;  
Sb 750, 754–756, 760; Sc 763; Se 767–770;  
Si 783, 785; Sm 789; Sn 795; Sr 803, 806;  
T 806; Ta 808, 810; Tb 812; Tc 814–816;  
Te 820; Th 824; Ti 76, 125, 806, 831–837;  
Tl 843; Tm 846; U 854, 855, 860; V 866,  
869, 870, 873; W 880–883; Xe 886–888;  
Y 891, 892; Yb 895; Zn 254, 457, 902;  
Zr 76, 125, 806, 909, 912, 913

hyper-, Ba 72; Cs 189; K 388; Na 540; Rb 698

per-, Ba 71; Ca 120; Cs 190; H 295; K 390;  
Li 424; Na 542; Rb 699; Sr 804; U 858

Oxonium 293

Oxygen (O) 588–593, nascent 589

Oxygenate, fluoro-, H 297; NO<sub>2</sub><sup>•</sup> 504

- Oxygenyl, di- 675  
 Ozone 590  
 Ozonide, Cs 189; K 389; Rb 698
- P**, *see* Phosphorus  
**Pa**, *see* Protactinium  
**Palladate**  
 chloro- (L) 639, 640, 642; cyano- (L) 637;  
 hydroxo- (L) 645  
**Palladium**  
 (Pd) 636–645  
 ammine- (L) 641, 642; ammine-chloro- (L) 642,  
 643  
 colloidal 636  
**Pb**, *see* Lead  
**Pd**, *see* Palladium  
**Phosphane**, di- 611  
**Phosphate**  
 chloro-oxo- (L) 607  
 di- ( $P_2O_4^{4-}$ ,  $H_2P_2O_7^{2-}$ ), Ag 14; Ba 73; Ca 122;  
 K 394; Mg 439; Mn 454; Na 528, 548;  
 Pb 633; Zr 913  
 fluoro- (L) 608, 609  
 hydrogen-oxodi- 299  
 meta-, Ag 14; Ca 122; K 393; Na 546; Th 824  
 ortho- ( $PO_4^{3-}$ ,  $HPO_4^{2-}$ ,  $H_2PO_4^-$ ), Ac 3; Ag 14;  
 Al 27; Ba 68, 73; Bi 93, Ca 117,  
 123; Ce 138; Co 163; Cr 181; D 212;  
 Fe 240, 249; Ga 259; In 352; K 377, 393;  
 Li 420, 425; Mg 437, 439; Mn 454;  
 $NH_4^+$  437, 480, 538; Na 526, 527, 538, 547;  
 Ni 583; Pb 633; Sr 803, 805; Tl 844; Y 892;  
 Zn 904  
 oxodi- ( $P_2O_6^{4-}$ ,  $H_2P_2O_7^{2-}$ ), H 301; Na 528, 548  
 oxododecamolybdo- (L) 612  
 oxododecavanado- (L) 617  
 oxododecawolframo- (L) 617  
 oxo-fluoro- (L) 614, 615  
 tri- 549  
**Phosphide**, Al 27; B 62; Ca 122; Cd 131; Co 163;  
 Cu 206; Fe 249; K 393; Mn 454; Ti 836;  
 Zn 904  
**Phosphinate**, Ba 73; Ca 122;  $NH_4^+$  487; Na 545  
**Phosphine** 610  
**Phosphonate** 546  
**Phosphonium** 611  
**Phosphorus**  
 (P) 63, 600–617  
 bromo- 604  
 black 601  
 chloro- 606, 607  
 red and violet (Hittorf) 601  
 white 600  
**Platinate**, bromo- (L) 655, 656; chloro- (L) 663–  
 672, 678; cyano- (L) 658–660; ethylene-  
 chloro- (L) 657; fluoro- (L) 674, 675; hy-  
 droxo- (L) 685, 686; nitro- (L) 682  
**Platinum**  
 (Pt) 651–689  
 ammine- (L) 677, 678; ammine-chloro-  
 (L) 678–680; ammine-nitro- (L) 681;  
 carbonyl-chloro- (L) 660, 661  
 colloidal 652  
 ethylene-chloro- (L) 657  
 sponge 652  
 trifluorophosphorus- (L) 686  
**Plumbate**, chloro- (L) 627; hydroxo- (L) 633;  
 iodo- (L) 628  
**Plutonium** (Pu) 689–691  
**Plutonyl** 691  
**Pm**, *see* Promethium  
**Po**, *see* Polonium  
**Pobedit** 878  
**Polonium** (Po) 646–648  
**Potassium** (K) 362–406  
**Pr**, *see* Praseodymium  
**Praseodymium** (Pr) 648–651  
**Promethium** (Pm) 645–646  
**Protactinium** (Pa) 617–622  
**Pt**, *see* Platinum  
**Pu**, *see* Plutonium
- Quartz** 783, 784
- Ra**, *see* Radium  
**Radium** (Ra) 691–692  
**Radon** (Rn) 721  
**Rb**, *see* Rubidium  
**Re**, *see* Rhenium  
**Rh**, *see* Rhodium  
**Rhenate**  
 chloro- (L) 707; chloro-oxo- (L) 708;  
 hydrido- (L) 710; iodo- (L) 711  
 per-, Ag 14; Ba 73; K 394;  $NH_4^+$  487; Na 549  
**Rhenium**  
 (Re) 702–715  
 carbonyl- (L) 704; carbonyl-bromo-,  
 carbonyl-chloro-, and carbonyl-iodo- 704  
**Rhodate**  
 chloro- (L) 718, 719  
 nitro- (L) 720  
**Rhodium**  
 (Rh) 715–721  
 ammine- (L) 720; carbonyl- (L) 716;  
 carbonyl-chloro- (L) 717  
 colloidal 715  
**Rn**, *see* Radon  
**Ru**, *see* Ruthenium

- Rubidium (Rb) 692–702
- Ruthenate  
 aqua-chloro- (L) 725; chloro- and chloro-oxo- (L) 724  
 oxo- 395
- Ruthenium  
 (Ru) 721–726  
 carbonyl- and cyclopentadienyl- (L) 723
- Rutherfordium (Rf) 588
- Rutile 834
- S, *see* Sulfur
- Salt, Graham, Kurror, and Madrell 546
- Samarium (Sm) 787–790
- Sb, *see* Antimony
- Sc, *see* Scandium
- Scandate, hydroxo- (L) 764
- Scandium (Sc) 760–764
- Se, *see* Selenium
- Selenate, Ag 16; Au 50; Ba 75; Cu 210; K 403; Na 558; Pb 636; Pd 645
- Selenide, Ag 16; Al 16; As 42; Bi 94; C 110; Cd 132; Cu 210; Ge 269; H 312; Hg 338; K 403; Na 557; Ni 585; P 617; Pb 635; Sb 760; Sn 799; W 883; Zn 906
- Selenite 557
- Selenium  
 (Se) 765–770  
 amorphous, colloidal, gray (metallic) and red 765
- Si, *see* Silicon
- Silane, (SiH<sub>4</sub>) 780; poly- (di-, tri-, tetra-, et al.) 781
- Silhydrite 785
- Silica, fibrous 784
- Silicate  
 dimeta-, K 404; Na 559  
 fluoro- (L) 775–780  
 meta-, Ba 76; Ca 124; Fe 253; K 404; Li 427; Mn 457; Na 559; Sr 806; Zn 906  
 ortho-, Be 84; Ca 124; Cd 132; Co 165; Fe 254; Li 428; Mn 457; Na 560; Th 825; Zn 906; Zr 914  
 oxododecamolybdo- (L) 782  
 oxododecawolfram- (L) 787  
 oxotetra- 405
- Silicide, Ca 124; Mg 440; Mo 466; Th 825; Ti 838; W 883
- Silicon (Si) 770–787
- Silver  
 (Ag) 3–16, 333, 759  
 ammine- (L) 11
- Sm, *see* Samarium
- Sn, *see* Tin
- Sodium  
 (Na) 507–565  
 ammine- (L) 538
- Spirit of hartshorn 471, 473
- Sr, *see* Strontium
- Stannane 794
- Stannate, chloro- (L) 794; hydroxo- (L) 797; thio- (L) 798
- Stibate, chloro- (L) 750; fluoro- (L) 752; hydroxo- (L) 756, 757; thio- (L) 758, 759
- Stibide, K 402; Li 427; Na 557
- Stibine 753
- Stishovite 784
- Strontium (Sr) 800–806
- Sulfane, poly- 305
- Sulfate  
 (SO<sub>4</sub><sup>2-</sup>, HSO<sub>4</sub><sup>-</sup>), Ag 15; Al 23, 28, 184, 363, 509, 693; Ba 74; Be 84; Bi 94; Ca 124; Cd 131; Ce 138, 139; Co 164, 370; Cr 175, 181–183, 186, 372, 695; Cs 184, 186–188, 193; Cu 208, 209; D 213; Dy 215; Er 217; Eu 222; Fe 186, 242, 251, 251, 375, 696; Ga 187, 257, 260; Gd 262; Hf 324; Hg 337, 338; Ho 340; In 352; Ir 360, 361; K 363, 370, 372, 375, 379, 382, 398, 406; La 411, Li 420, 427; Lu 430; Mg 382, 437, 439; Mn 188, 455, 456; NH<sub>4</sub><sup>+</sup> 23, 175, 242, 257, 360, 437, 482, 489, 868; N<sub>2</sub>H<sub>5</sub><sup>+</sup> and N<sub>2</sub>H<sub>6</sub><sup>2+</sup> 495; NH<sub>3</sub>OH<sup>+</sup> 498; NO<sup>+</sup> 501; Na 509, 530, 553; Nd 572; Ni 584; Pb 635; Pd 645; Po 648; Pr 651; Ra 692; Rb 693, 695, 696, 701, 702; Sb 759; Sc 764; Sm 790; Sn 798, 799; Sr 805; Tb 813; Th 825; Ti 837; Tl 183, 841, 845; Tm 847; U 859, 860; V 193, 406, 702, 868, 874–876; Y 892; Yb 895; Zn 905; Zr 914
- di-, Cs 193; K 399; NO<sup>+</sup> 502; Na 555  
 oxodi- 553  
 peroxodi-, K 401; NH<sub>4</sub><sup>+</sup> 490; Na 556  
 thio-, Ag 16; Ba 75; Ca 124; K 402; NH<sub>4</sub><sup>+</sup> 490; Na 556; Pb 635; Rb 702; Sr 806; Tl 845
- Sulfide  
 (S<sup>2-</sup>, HS<sup>-</sup>), Ac 3; Ag 14, 16; Al 27; As 40, 41; Au 49; B 63; Ba 68, 73; Be 84; Bi 93; C 108, 109; Ca 123; Cd 131; Ce 138; Co 155, 163; Cr 181; Cs 192; Cu 207, 239; D 213; Dy 215; Er 217; Eu 222; Fe 227, 239, 250; Ga 259; Gd 262; Ge 268, 269; H 303; Hg 336; In 352; Ir 361; K 378, 369; La 411; Li 426; Mg 439; Mn 454; Mo 465; NH<sub>4</sub><sup>+</sup> 481; Na 529, 550; Nd 572; Ni 583; P 615–617; Pb 634; Pd 645; Po 648; Pr 651; Pt 688; Pu 691; Ra 692; Rb 701; Re 714; Rh 721; Sb 16, 757, 758; Sc 764; Si 786; Sm 789; Sn 797, 798; Sr 805; Te 816; Th 825; Ti 836; Tl 845; U 859; V 874, 875; W 883; Y 892; Zn 904; Zr 913
- di-, Ba 74; Co 163; Fe 250; Hg 337; Mn 455; Ni 584; Os 600; Pd 645; Rb 701; Ru 726; V 874  
 penta- 701



Sulfide (*Cont.*):

poly-, Cs 192; K 396;  $\text{NH}_4^+$  488; Na 551

tetra- 74

tri-, Ba 74; Rb 701

Sulfite

( $\text{SO}_3^{2-}$ ,  $\text{HSO}_3^-$ ), Ag 15; Ba 74; Ca 123; K 378, 397; Li 426;  $\text{NH}_4^+$  481, 488; Na 530, 552

di-, K 398; Na 554

fluoro- 400

Sulfonate, fluoro-, Cl 148; K 401; Li 427;  $\text{NH}_4^+$  490

Sulfur

(S) 726-745

fluoro- 739

monoclinic, orthorhombic or plastic 728

T, *see* Tritium

Ta, *see* Tantalum

Tantalate, fluoro- (L) 809

Tantalum (Ta) 807-811

Tb, *see* Terbium

Tc, *see* Technetium

Technetate

chloro- (L) 814; fluoro- (L) 815

per- 491

Technetium

(Tc) 813-817

carbonyl- (L) 814

Te, *see* Tellurium

Tellurate, ortho- ( $\text{TeO}_6^{6-}$ ,  $\text{H}_4\text{TeO}_6^{2-}$ ), K 379; Na 531, 562

Telluride, Ag 16; Al 28; Bi 95; Cd 132; Ge 269; H 316; Hg 338; K 405; Na 560; Pb 636; Sb 760; Sn 799; Zn 906

Tellurite, Ca 124; K 405; Na 561

Tellurium

(Te) 817-821

colloidal 817

Terbium (Tb) 811-813

Th, *see* Thorium

Thallium (Tl) 183, 838-845

Thionate

di-, Ba 75; K 399; Na 555

poly- 400

Thorium (Th) 821-825

Thulium (Tm) 845-847

Ti, *see* Titanium

Tin

(Sn) 790-799

gray and white 791

Titanate, fluoro- (L) 832

Titanium

(Ti) 76, 125, 806, 825-838

cyclopentadienyl- and cyclopentadienyl-chloro- (L) 828

Tl, *see* Thallium

Tm, *see* Thulium

Tridymite 784

Tritium (T) 806-807

Tungsten

(W) 876-883

carbonyl- (L) 878

U, *see* Uranium

Uranate, fluoro- (L) 853

Uranium (U) 847-861

Uranyl 856-859

V, *see* Vanadium

Vanadate

di-, K 406; Na 564

fluoro- (L) 868

meta-, K 406;  $\text{NH}_4^+$  492; Na 562

ortho-, K 406; Na 563

thio- (L) 875

Vanadium

(V) 193, 406, 702, 861-876

carbonyl- and cyclopentadienyl- (L) 863

oxo- 872

Vanadophosphate 617

Vanadyl 871, 873, 874

W, *see* Tungsten

Water 293, 517

bromine 96

chlorine 141

distilled 294

heavy 211

hydrosulfuric 303

iodine 341, 380

natural 293

ultra-pure 294

Wolframate

( $\text{WO}_4^{2-}$ ), Ca 125; Fe 254; K 406; Li 428;

Mg 440;  $\text{NH}_4^+$  482; Na 564; Pb 636

cyano- (L) 878

oxododeca- 482

Wolframophosphate 617

Wolframosilicate 787

Xe, *see* Xenon

Xenon (Xe) 675, 883-889

Xenonate

fluoro- (L) 886

oxo-, Ba 76; Na 565

Y, *see* Yttrium

**Yb**, *see* Ytterbium

Ytterbium (Yb) **893–896**

Yttrium (Y) **889–893**

Zinc

(Zn) 254, 457, **896–906**

ammine-chloro- (L) 901

Zincantimony 906

Zincate, chloro- (L) 900; hydroxo- (L) 903

Zirconate, chloro- (L) 909; fluoro- (L) 911

Zirconium (Zr) 125, 806, **906–915**

**Zn**, *see* Zinc

**Zr**, *see* Zirconium