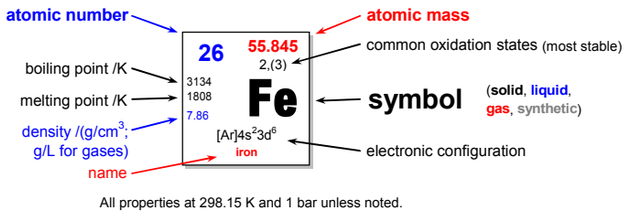
Periodic Table of the Elements



All properties at 298.15 K and 1 bar unless noted.

1																	18
1 **H** hydrogen 1.0080 ±1 20.28 17.81 0.08988 $1s^1$	2											13	14	15	16	17	2 **He** helium 4.002602 0 4.216 0.8 (26 bar) 0.1787 $1s^2$
3 **Li** lithium 6.97 1 1615 453.69 0.53 $[He]2s^1$	4 **Be** beryllium 9.012182 2 2745 1560 1.848 $[He]2s^2$											5 **B** boron 10.81 3 4273 2352 2.34 $[He]2s^22p^1$	6 **C** carbon 12.011 2,(±4) 5100 4098 (sub.) 2.62 $[He]2s^22p^2$	7 **N** nitrogen 14.0069 ±1,±2,(±3),4,5 77.4 63.29 1.2506 $[He]2s^22p^3$	8 **O** oxygen 15.9994 -2 90.188 54.8 1.429 $[He]2s^22p^4$	9 **F** fluorine 18.998403 -1 85.01 53.53 1.696 $[He]2s^22p^5$	10 **Ne** neon 20.1797 0 27.102 24.48 0.8999 $[He]2s^22p^6$
11 **Na** sodium 22.989769 1 1156.1 370.96 0.971 $[Ne]3s^1$	12 **Mg** magnesium 24.3050 2 1363 922 1.738 $[Ne]3s^2$	3	4	5	6	7	8	9	10	11	12	13 **Al** aluminum 26.981539 3 2792 933.52 2.702 $[Ne]3s^23p^1$	14 **Si** silicon 28.085 2,(4),-4 3538 1683 2.33 $[Ne]3s^23p^2$	15 **P** phosphorus 30.973762 ±3,(5) 550 317.3 1.82 $[Ne]3s^23p^3$	16 **S** sulfur 32.07 -2,4,(6) 717.8 388.36 2.07 $[Ne]3s^23p^4$	17 **Cl** chlorine 35.45 (±1),3,5,7 238.6 172.17 3.214 $[Ne]3s^23p^5$	18 **Ar** argon 39.948 0 87.5 84 1.7824 $[Ne]3s^23p^6$
19 **K** potassium 39.0983 1 1033.1 336.4 0.862 $[Ar]4s^1$	20 **Ca** calcium 40.078 2 1757 1112 1.55 $[Ar]4s^2$	21 **Sc** scandium 44.955912 3 3103 1814 3.00 $[Ar]4s^23d^1$	22 **Ti** titanium 47.867 2,3,(4) 3560 1941±10 4.50 $[Ar]4s^23d^2$	23 **V** vanadium 50.9415 2,3,4,(5) 3680 2163±10 5.80 $[Ar]4s^23d^3$	24 **Cr** chromium 51.9961 2,(3),6 2945 2130 7.19 $[Ar]4s^13d^5$	25 **Mn** manganese 54.938045 (2),3,4,6,7 2334 1517 7.43 $[Ar]4s^23d^5$	26 **Fe** iron 55.845 2,(3) 3134 1808 7.86 $[Ar]4s^23d^6$	27 **Co** cobalt 58.933195 (2),3 3200 1768 8.90 $[Ar]4s^23d^7$	28 **Ni** nickel 58.6934 (2),3 3186 1726 8.90 $[Ar]4s^23d^8$	29 **Cu** copper 63.546 1,(2) 2840 1356 8.96 $[Ar]4s^13d^{10}$	30 **Zn** zinc 65.38 2 1180 692.73 7.14 $[Ar]4s^23d^{10}$	31 **Ga** gallium 69.723 3 2477 302.93 5.907 $[Ar]4s^23d^{10}4p^1$	32 **Ge** germanium 72.63 2,(4) 3103 1210.6 5.323 $[Ar]4s^23d^{10}4p^2$	33 **As** arsenic 74.92160 (±3),5 886 (sub.) 1090 (28 bar) 5.72 $[Ar]4s^23d^{10}4p^3$	34 **Se** selenium 78.96 -2,(4),6 958.1 490 4.79 $[Ar]4s^23d^{10}4p^4$	35 **Br** bromine 79.904 (±1),5 331.93 266 3.119 $[Ar]4s^23d^{10}4p^5$	36 **Kr** krypton 83.798 0 120.9 116.6 3.708 $[Ar]4s^23d^{10}4p^6$
37 **Rb** rubidium 85.4678 1 959 312.04 1.53 $[Kr]5s^1$	38 **Sr** strontium 87.62 2 1657 1042 2.60 $[Kr]5s^2$	39 **Y** yttrium 88.90585 3 3611 1795±8 4.47 $[Kr]5s^24d^1$	40 **Zr** zirconium 91.224 4 4650 2125±2 6.40 $[Kr]5s^24d^2$	41 **Nb** niobium 92.906 3,(5) 5015 2471±10 8.57 $[Kr]5s^14d^4$	42 **Mo** molybdenum 95.96 2,3,4,5,(6) 4885 2890 10.20 $[Kr]5s^14d^5$	43 **Tc** technetium [97.9072] 4,6,(7) 5150 2445 11.5 $[Kr]5s^24d^5$	44 **Ru** ruthenium 101.07 2,(3),(4),6,8 4423 2607 12.20 $[Kr]5s^14d^7$	45 **Rh** rhodium 102.90550 (2),3,4 3968 2239±3 12.40 $[Kr]5s^14d^8$	46 **Pd** palladium 106.42 (2),4 3213 1825 12.02 $[Kr]4d^{10}$	47 **Ag** silver 107.8682 1 2435 1235.08 10.50 $[Kr]5s^14d^{10}$	48 **Cd** cadmium 112.411 2 1038 594.1 8.65 $[Kr]5s^24d^{10}$	49 **In** indium 114.818 3 2353 429.76 7.31 $[Kr]5s^24d^{10}5p^1$	50 **Sn** tin 118.710 2,(4) 2875 505.12 7.30 $[Kr]5s^24d^{10}5p^2$	51 **Sb** antimony 121.760 (±3),5 1860 903.89 6.684 $[Kr]5s^24d^{10}5p^3$	52 **Te** tellurium 127.60 -2,(4),6 1263.1 722.7 6.24 $[Kr]5s^24d^{10}5p^4$	53 **I** iodine 126.90447 (±1),5,7 457.35 (35 bar) 387 4.93 $[Kr]5s^24d^{10}5p^5$	54 **Xe** xenon 131.293 0 166.1 161.3 5.88 $[Kr]5s^24d^{10}5p^6$
55 **Cs** cesium 132.905452 1 942.5 301.55 1.873 $[Xe]6s^1$	56 **Ba** * barium 137.327 2 2170 998 3.51 $[Xe]6s^2$	71 **Lu** lutetium 174.9668 3 3675 1936 9.85 $[Xe]6s^24f^{14}5d^1$	72 **Hf** hafnium 178.49 4 4875 2500 13.2 $[Xe]6s^24f^{14}5d^2$	73 **Ta** tantalum 180.94788 5 5700±100 3269 16.6 $[Xe]6s^24f^{14}5d^3$	74 **W** tungsten 183.84 2,3,4,5,(6) 5933 3683±20 19.3 $[Xe]6s^24f^{14}5d^4$	75 **Re** rhenium 186.207 -1,2,4,6,(7) 5900 (est.) 3453 21.0 $[Xe]6s^24f^{14}5d^5$	76 **Os** osmium 190.23 2,3,(4),6,8 5300 3327 22.4 $[Xe]6s^24f^{14}5d^6$	77 **Ir** iridium 192.217 2,3,(4),6 4403 2683 22.42 $[Xe]6s^24f^{14}5d^7$	78 **Pt** platinum 195.084 2,(4) 4100 2045 21.45 $[Xe]6s^14f^{14}5d^9$	79 **Au** gold 196.966569 1,(3) 3081 1337.58 19.32 $[Xe]6s^14f^{14}5d^{10}$	80 **Hg** mercury 200.59 1,(2) 629.73 234.28 13.546 $[Xe]6s^24f^{14}5d^{10}$	81 **Tl** thallium 204.384 (1),3 1730±10 576.7 11.85 $[Xe]6s^24f^{14}5d^{10}6p^1$	82 **Pb** lead 207.2 (2),4 2013 600.652 11.34 $[Xe]6s^24f^{14}5d^{10}6p^2$	83 **Bi** bismuth 208.98040 (3),5 1833±5 544.5 9.80 $[Xe]6s^24f^{14}5d^{10}6p^3$	84 **Po** polonium [208.9824] 2,(4) 1235 527 9.4 $[Xe]6s^24f^{14}5d^{10}6p^4$	85 **At** astatine [209.9871] (±1),3,5,7 610 575 — $[Xe]6s^24f^{14}5d^{10}6p^5$	86 **Rn** radon [222.0176] 0 211 202 9.73 $[Xe]6s^24f^{14}5d^{10}6p^6$
87 **Fr** francium [223.0197] 1 950 300 — $[Rn]7s^1$	88 **Ra** ** radium [226.0254] 2 1413 973 5.0 $[Rn]7s^2$	103 **Lr** lawrencium [261.1096] 3 — — — $[Rn]7s^25f^{14}6d^1$	104 **Rf** rutherfordium [265.1167] 4 — — — $[Rn]7s^25f^{14}6d^2$	105 **Db** dubnium [268.1250] — — — — $[Rn]7s^25f^{14}6d^3$	106 **Sg** seaborgium [271.133] — — — — $[Rn]7s^25f^{14}6d^4$	107 **Bh** bohrium [270] — — — — $[Rn]7s^25f^{14}6d^5$	108 **Hs** hassium [277.150] — — — — $[Rn]7s^25f^{14}6d^6$	109 **Mt** meitnerium [276.151] — — — — $[Rn]7s^25f^{14}6d^7$	110 **Ds** darmstadtium [281] — — — — $[Rn]7s^15f^{14}6d^9$	111 **Rg** roentgenium [280.164] — — — — $[Rn]7s^15f^{14}6d^{10}$	112 **Cn** copernicium [285.174] — — — — $[Rn]7s^25f^{14}6d^{10}$	113 **Nh** nihonium [285] provisional — — — — $[Rn]7s^25f^{14}6d^{10}7p^1$	114 **Fl** flerovium [289.187] — — — — $[Rn]7s^25f^{14}6d^{10}7p^2$	115 **Mc** moscovium [288] provisional — — — — $[Rn]7s^25f^{14}6d^{10}7p^3$	116 **Lv** livermorium [293] — — — — $[Rn]7s^25f^{14}6d^{10}7p^4$	117 **Ts** tennessine [294] provisional — — — — $[Rn]7s^25f^{14}6d^{10}7p^5$	118 **Og** oganesson [294] provisional — — — — $[Rn]7s^25f^{14}6d^{10}7p^6$

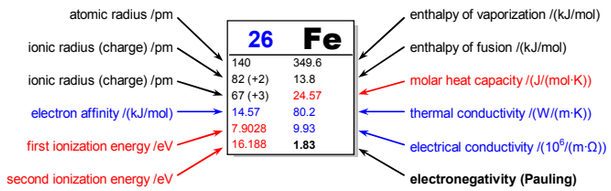
*	57 **La** lanthanum 138.90547 3 3737 1191 6.7 $[Xe]6s^25d^1$	58 **Ce** cerium 140.116 (3),4 3706 1071±3 6.78 $[Xe]6s^24f^15d^1$	59 **Pr** praseodymium 140.90765 (3),(4) 3793 1204 6.77 $[Xe]6s^24f^3$	60 **Nd** neodymium 144.242 3 3347 1294 7.00 $[Xe]6s^24f^4$	61 **Pm** promethium [144.9127] 3 3300 (est.) 1315 6.475 $[Xe]6s^24f^5$	62 **Sm** samarium 150.36 2,(3) 2067 1347 7.54 $[Xe]6s^24f^6$	63 **Eu** europium 151.964 2,(3) 1800 1095 5.259 $[Xe]6s^24f^7$	64 **Gd** gadolinium 157.25 3 3546 1586 7.895 $[Xe]6s^24f^75d^1$	65 **Tb** terbium 158.925 (3),4 3503 1629 8.27 $[Xe]6s^24f^9$	66 **Dy** dysprosium 162.500 3 2840 1685 8.536 $[Xe]6s^24f^{10}$	67 **Ho** holmium 164.93032 3 2973 1747 8.80 $[Xe]6s^24f^{11}$	68 **Er** erbium 167.259 3 3141 1802 9.05 $[Xe]6s^24f^{12}$	69 **Tm** thulium 168.93421 2,(3) 2223 1818 9.33 $[Xe]6s^24f^{13}$	70 **Yb** ytterbium 173.054 2,(3) 1469 1092 6.98 $[Xe]6s^24f^{14}$
**	89 **Ac** actinium [227.0278] 3 3500±300 1323 10.07 $[Rn]7s^26d^1$	90 **Th** thorium 232.0381 4 4273 2023 11.70 $[Rn]7s^26d^2$	91 **Pa** protactinium [231.0359] 4,(5) — 1873 15.40 $[Rn]7s^25f^26d^1$	92 **U** uranium 238.02891 3,4,5,(6) 4091 1405 18.90 $[Rn]7s^25f^36d^1$	93 **Np** neptunium [237.0482] 3,4,(5),6 4175 913 20.45 $[Rn]7s^25f^46d^1$	94 **Pu** plutonium [244.0642] 3,(4),5,6 3505 914 19.80 $[Rn]7s^25f^6$	95 **Am** americium [243.0614] (3),4,5,6 2880 1267 13.6 $[Rn]7s^25f^7$	96 **Cm** curium [247.0704] (3),4 — 1613 13.5 $[Rn]7s^25f^76d^1$	97 **Bk** berkelium [247.0703] (3),4 — — — $[Rn]7s^25f^9$	98 **Cf** californium [251.0796] (3),4 — — — $[Rn]7s^25f^{10}$	99 **Es** einsteinium [252.0830] (2),3 — — — $[Rn]7s^25f^{11}$	100 **Fm** fermium [257.0951] 3 — — — $[Rn]7s^25f^{12}$	101 **Md** mendelevium [258.0984] 2,3 — — — $[Rn]7s^25f^{13}$	102 **No** nobelium [259.1010] 2,3 — — — $[Rn]7s^25f^{14}$

The latest version of this document is available from www.consol.ca.

Data from www.iupac.org. For several elements, the variability in atomic mass depends substantially on whether the sample origin is organic or inorganic. For these elements, the average, with decreased precision, is reported.

Last revised 06.2016

Periodic Table of the Elements



All properties at 298.15 K and 1 bar unless noted.

1																		18
1 H																		2 He
25	0.44936																	30 0.0845
154 (–1)	0.05868																	— —
—	28.84																	— 20.79
72.77	0.1815																	— 0.152
13.598	—																	24.587 —
—	2.20																	54.418 0
3 Li		4 Be											5 B		6 C		7 N	8 O	9 F	10 Ne
145	145.92	105	292.4										85	489.7	70	355.8	65 2.7928	60 3.4099	50 3.2698	40 1.7326
78 (+1)	3	34 (+2)	12.2										23 (+3)	50.2	16 (+4)	—	171 (–3) 0.3604	22 (+1) 0.22259	133 (–1) 0.2552	— 0.3317
—	25.08	—	16.40										—	11.03	260 (–4)	8.53	— 29.13	132 (–2) 29.44	— 31.16	— 18.24
59.63	84.7	—	200										26.99	27	121.78	129	— 0.02598	140.98 0.02674	328.17 0.0279	— 0.0493
5.3915	10.80	9.3227	31.30										8.2976	0.00	11.261	0.06	14.534 —	13.618 —	17.422 —	21.565 —
75.639	**0.98**	18.211	**1.57**										25.155	**2.04**	24.383	**2.55**	29.600 **3.04**	35.117 **3.44**	34.971 **3.98**	40.963 **0**
11 Na		12 Mg		3		4		5		6		7		8		9		10		11		12		13 Al		14 Si		15 P		16 S		17 Cl		18 Ar	
180	96.96	150	127.4																				125	293.4	110	384.22	100 12.129	100 —	100 10.2	70 6.447		
98 (+1)	2.598	79 (+2)	8.954																				57 (+3)	10.79	26 (+4)	50.55	17 (+5) 0.657	29 (+6) 1.7175	181 (–1) 3.203	— 1.188		
—	28.28	—	24.79																				72 (+1)	24.28	271 (–4)	19.94	212 (–3) 23.85	184 (–2) 22.77	— 34.03	— 20.77		
52.87	141	—	156																				41.76	237	134.07	148	72.03 0.235	200.41 0.269	348.58 0.0089	— 0.01772		
5.1386	21.00	7.6457	22.60																				5.9854	37.70	8.1515	0.00	10.487 0.00	10.360 0.00	12.968 —	15.760 —		
47.282	**0.93**	15.035	**1.31**																				18.829	**1.50**	16.345	**1.80**	19.765 **2.19**	23.340 **2.58**	23.817 **3.16**	27.629 **0**		
19 K		20 Ca		21 Sc		22 Ti		23 V		24 Cr		25 Mn		26 Fe		27 Co		28 Ni		29 Cu		30 Zn		31 Ga		32 Ge		33 As		34 Se		35 Br		36 Kr	
220	79.87	180	153.6	160	314.2	140	421	135	0.452	140	344.3	140	226	140	349.6	135	376.5	135	370.4	135	300.3	135	115.3	130	258.7	125	330.9	115	34.76	115	37.7	115	15.438	90	9.029
133 (+1)	2.334	106 (+2)	8.54	83 (+3)	14.1	86 (+2)	15.45	79 (+2)	20.9	82 (+2)	16.9	91 (+2)	12.05	82 (+2)	13.8	82 (+2)	16.19	78 (+2)	17.47	96 (+1)	13.05	83 (+2)	7.322	113 (+2)	5.59	53 (+4)	36.94	69 (+3) —		69 (+4)	6.694	196 (–1)	5.286	—	1.638
—	29.32	—	25.25	—	26.97	61 (+4)	24.89	54 (+5)	24.96	62 (+3)	23.40	52 (+4)	26.37	67 (+3)	24.57	64 (+3)	24.75	62 (+3)	25.83	72 (+2)	24.15	—	25.50	62 (+3)	25.80	272 (–4)	23.24	46 (+5) 24.72		191 (–2)	25.27	—	75.59	—	20.78
48.39	102.4	2.37	200	18.14	15.8	7.62	21.9	50.66	30.7	64.26	93.7	—	7.82	14.57	80.2	63.87	100	111.54	90.7	119.16	401	—	116	41.49	40.6	118.94	59.9	78.54 50		194.97	2.04	324.54	0.122	—	0.00949
4.3406	13.90	6.1128	29.80	6.5616	1.77	6.8280	2.34	6.7461	4.89	6.7668	7.74	7.4343	0.70	7.9028	9.93	7.8810	17.20	7.6395	14.30	7.7266	59.60	9.3942	16.60	5.9988	6.78	7.8976	0.00	9.8150 3.45		9.7528	0.00	11.814	—	14.000	—
31.632	**0.82**	11.871	**1.00**	12.800	**1.36**	13.575	**1.54**	14.655	**1.63**	16.485	**1.66**	15.640	**1.55**	16.188	**1.83**	17.080	**1.88**	18.169	**1.91**	20.292	**1.90**	17.964	**1.65**	20.514	**1.81**	15.935	**2.01**	18.635 **2.18**		21.195	**2.55**	21.796	**2.96**	24.360	**0**
37 Rb		38 Sr		39 Y		40 Zr		41 Nb		42 Mo		43 Tc		44 Ru		45 Rh		46 Pd		47 Ag		48 Cd		49 In		50 Sn		51 Sb		52 Te		53 I		54 Xe	
235	72.216	200	144	180	363	155	58.2	145	682	145	598	135	660	130	595	135	493	140	357	160	250.58	155	99.57	155	231.5	145	295.8	145	77.14	140	52.55	140	20.752	110	12.636
149 (+1)	2.192	127 (+2)	8.3	106 (+3)	11.4	109 (+2)	16.9	74 (+4)	26.4	92 (+2)	32	95 (+4)	24	77 (+3)	24	75 (+3)	21.5	113 (+4)	17.6	113 (+1)	11.3	103 (+2)	6.192	132 (+1)	3.263	93 (+2)	7.029	89 (+3)	19.87	97 (+4)	17.49	196 (–1)	7.824	—	2.297
—	31.02	—	26.29	—	26.67	87 (+4)	24.63	69 (+5)	24.16	62 (+6)	23.99	72 (+5)	20.56	65 (+4)	24.05	67 (+4)	24.90	89 (+5)	25.54	89 (+2)	25.35	—	25.85	92 (+3)	26.41	74 (+4)	26.95	62 (+5)	25.57	—	25.52	—	54.32	—	20.74
46.88	58.2	4.63	35.3	29.62	17.2	41.10	22.7	86.16	53.7	72.17	138	53.07	50.6	101.31	117	109.71	150	54.23	71.8	125.63	429	—	96.8	28.95	81.6	107.30	66.6	100.93	24.3	190.16	2.35	295.16	0.449	—	0.00569
4.1768	7.79	5.6952	7.62	6.2186	1.66	6.6342	2.36	6.7585	6.93	7.0923	18.70	7.2757	6.70	7.3607	13.70	7.4592	21.10	8.3370	9.50	7.5763	63.00	8.9941	13.80	5.7864	11.60	7.3441	9.17	8.6438	2.88	9.0097	0.00	10.451	0.00	12.130	—
27.289	**0.82**	11.030	**0.95**	12.230	**1.22**	13.163	**1.33**	14.303	**1.60**	16.168	**2.16**	15.235	**1.90**	16.790	**2.20**	18.034	**2.28**	19.381	**2.20**	21.454	**1.93**	16.908	**1.69**	18.870	**1.78**	14.632	**1.96**	16.530 **2.05**		18.552 **2.10**		19.131	**2.66**	21.209	**0**
55 Cs		56 Ba*		71 Lu		72 Hf		73 Ta		74 W		75 Re		76 Os		77 Ir		78 Pt		79 Au		80 Hg		81 Tl		82 Pb		83 Bi		84 Po		85 At		86 Rn	
260	67.74	215	142	175	355.9	155	575	145	743	135	824	135	715	130	746	135	604	135	510	135	334.4	150	59.229	190	164.1	180	177.7	160	104.8	190	—	—	—	—	16.4
165 (+1)	2.092	143 (+2)	7.75	85 (+3)	18.6	84 (+4)	24.06	72 (+3)	31.6	62 (+6)	35.4	60 (+7)	33.2	67 (+4)	31.8	75 (+3)	26.1	70 (+4)	19.6	137 (+1)	12.55	112 (+2)	2.295	149 (+1)	4.142	132 (+2)	4.799	96 (+3)	11.3	65 (+4)	—	57 (+5)	—	—	2.89
—	31.90	—	28.01	—	26.25	—	24.99	64 (+5)	25.33	—	23.90	—	24.21	—	24.73	66 (+4)	24.99	—	25.36	91 (+3)	25.21	—	27.88	105 (+3)	26.57	84 (+4)	26.94	—	25.08	230 (–2)	25.08	227 (–3)	—	—	19.98
45.51	35.9	13.95	18.4	—	16.4	≈0	23	31.07	57.5	78.64	174	14.47	47.9	106.14	87.6	150.89	147	205.32	71.6	222.75	317	—	8.34	19.30	46.1	35.12	35.3	91.28	7.87	183.33	20	270.16	1.7	—	0.00364
3.8939	4.89	5.2122	3.00	5.4257	1.85	6.8249	3.12	7.8872	7.61	7.9805	18.90	7.8768	5.42	8.7060	10.90	9.1206	19.70	9.0169	9.66	9.2252	45.20	10.4379	1.04	6.1087	6.17	7.4167	4.81	7.2861	0.87	8.4168	2.19	9.2242	—	10.748	—
23.157	**0.79**	10.004	**0.89**	13.888	**1.27**	14.925	**1.30**	15.546	**1.50**	17.619	**2.36**	13.059	**1.90**	16.583	**2.20**	16.583	**2.20**	18.562	**2.28**	20.521	**2.54**	18.759	**2.00**	20.428	**2.04**	15.033	**1.87**	16.686 **2.02**		— **2.00**		— **2.20**		— **0**	
87 Fr		88 Ra**		103 Lr		104 Rf		105 Db		106 Sg		107 Bh		108 Hs		109 Mt		110 Ds		111 Rg		112 Cn		113 Nh		114 Fl		115 Mc		116 Lv		117 Ts		118 Og	
—	—	215	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
180 (+1)	—	162 (+2)	—	88 (+3)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	27.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
44.38	15	—	18.6	—	10	—	23	—	58	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3.9384	3.00	5.2785	—	4.8712	—	6.0113	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	**0.70**	10.147	**0.90**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

	57 La		58 Ce		59 Pr		60 Nd		61 Pm		62 Sm		63 Eu		64 Gd		65 Tb		66 Dy		67 Ho		68 Er		69 Tm		70 Yb	
*	195	414	185	414	185	296.8	185	273	185	—	185	166.4	185	143.5	180	359.4	175	330.9	175	230	175	241	175	261	175	191	175	128.9
	122 (+3)	6.2	107 (+3)	5.46	106 (+3)	6.89	104 (+3)	7.14	109 (+3)	—	108 (+3)	8.63	89 (+3)	9.21	97 (+3)	10.05	97 (+3)	10.8	91 (+3)	11.06	89 (+3)	12.2	89 (+3)	19.9	94 (+3)	16.84	113 (+2)	7.66
	—	26.39	—	26.62	—	26.77	—	27.41	—	26.08	—	30.07	—	27.35	—	36.17	81 (+4)	28.61	—	27.63	—	26.39	—	28.43	87 (+4)	27.03	86 (+3)	25.96
	45.35	13.5	—	11.4	—	12.5	—	16.5	—	17.9	—	13.3	—	13.9	—	10.6	—	11.1	—	10.7	—	16.2	—	14.3	—	16.8	-1.93	34.9
	5.5770	1.26	5.5387	1.15	5.4620	1.48	5.5252	1.57	5.5967	—	5.6433	0.96	5.6703	1.12	6.1502	0.74	5.8641	0.89	5.9387	1.08	6.0216	1.24	6.1077	1.17	6.1844	1.50	6.2538	3.51
	11.059	**1.10**	10.882	**1.12**	10.572	**1.13**	10.779	**1.14**	10.882	**1.13**	11.090	**1.17**	11.245	**1.20**	12.126	**1.20**	11.504	**1.20**	11.712	**1.22**	11.815	**1.23**	11.919	**1.24**	12.023	**1.25**	12.176	**1.10**
	89 Ac		90 Th		91 Pa		92 U		93 Np		94 Pu		95 Am		96 Cm		97 Bk		98 Cf		99 Es		100 Fm		101 Md		102 No	
**	195	—	180	514.4	180	—	175	477	175	—	175	344	175	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	162 (+2)	—	99 (+3)	16.1	113 (+3)	12.3	103 (+3)	8.52	110 (+3)	5.19	108 (+3)	2.84	107 (+3)	14.4	99 (+3)	15	98 (+3)	—	98 (+3)	—	98 (+3)	—	91 (+3)	—	90 (+3)	—	112 (+2)	—
	—	—	—	27.84	89 (+5)	27.72	80 (+6)	28.56	82 (+6)	28.45	81 (+6)	31.73	80 (+6)	26.74	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	33.77	12	—	54	—	47	—	27.6	—	6.3	—	6.74	—	10	—	10	—	10	—	10	—	10	—	10	—	10	—	10
	5.1718	—	6.0838	6.53	5.8869	5.29	6.1937	3.80	6.2652	0.82	6.0600	0.67	5.9905	2.20	6.0216	—	6.2289	—	6.3015	—	6.4155	—	6.4984	—	6.5813	—	6.6539	—
	12.126	**1.10**	11.504	**1.30**	—	**1.50**	14.717	**1.38**	—	**1.36**	—	**1.28**	—	**1.3**	—	**1.3**	—	**1.3**	—	**1.3**	—	**1.3**	—	**1.3**	—	**1.3**	—	**1.3**

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Data from www.iupac.org. For several elements, the variability in atomic mass depends substantially on whether the sample origin is organic or inorganic. For these elements, the average, with decreased precision, is reported.

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