

APPENDIX E ATOMIC MASSESEach atomic mass is that of the neutral atom, including its *Z* electrons.

Atomic Number	Element	Symbol	Mass Number	Atomic Mass (u)
0	(Neutron)	n	1	1.008665
1	Hydrogen	H	1	1.007825
	Deuterium	D	2	2.014102
	Tritium	T	3	3.016050
2	Helium	He	3	3.016029
			4	4.002603
3	Lithium	Li	6	6.015123
			7	7.016005
4	Beryllium	Be	7	7.016930
			8	8.005305
			9	9.012183
5	Boron	B	10	10.012938
			11	11.009305
6	Carbon	C	11	11.011434
			12	12.000000
			13	13.003355
			14	14.003242
7	Nitrogen	N	13	13.005739
			14	14.003074
			15	15.000109
			16	16.006100
			17	17.008450
8	Oxygen	O	15	15.003066
			16	15.994915
			17	16.999130
			18	17.999159
9	Fluorine	F	19	18.998403
10	Neon	Ne	20	19.992439
			22	21.991383
11	Sodium	Na	22	21.994435
			23	22.989768
			24	23.990963
12	Magnesium	Mg	23	22.994127
			24	23.985043
13	Aluminum	Al	27	26.981541
14	Silicon	Si	27	26.986703
			28	27.976928
			30	29.973770
15	Phosphorus	P	30	29.978308
			31	30.973762
			32	31.973906
16	Sulfur	S	32	31.972071
			35	34.969030
17	Chlorine	Cl	35	34.968853
			37	36.965903
18	Argon	Ar	40	39.962384
19	Potassium	K	39	38.963708
			40	39.963996
20	Calcium	Ca	40	39.962592
21	Scandium	Sc	45	44.955910
22	Titanium	Ti	48	47.947947

APPENDIX E ATOMIC MASSES (continued)

Atomic Number	Element	Symbol	Mass Number	Atomic Mass (u)
23	Vanadium	V	51	50.943962
24	Chromium	Cr	52	51.940511
25	Manganese	Mn	55	54.938048
26	Iron	Fe	56	55.934940
27	Cobalt	Co	59	58.933198
			60	59.933815
28	Nickel	Ni	58	57.935346
			60	59.930788
			64	63.927968
29	Copper	Cu	63	62.929599
			64	63.929761
			65	64.927792
30	Zinc	Zn	64	63.929144
			66	65.926035
31	Gallium	Ga	69	68.925581
32	Germanium	Ge	72	71.922079
			74	73.921177
33	Arsenic	As	75	74.921594
34	Selenium	Se	80	79.916519
			87	86.9293
35	Bromine	Br	79	78.918336
			86	85.918444
			87	86.920327
36	Krypton	Kr	84	83.911509
			89	88.917555
			92	91.92576
37	Rubidium	Rb	85	84.911794
			87	86.909185
38	Strontium	Sr	86	85.909268
			87	86.908891
			88	87.905618
			90	89.907739
39	Yttrium	Y	89	88.905848
40	Zirconium	Zr	90	89.904702
41	Niobium	Nb	93	92.906376
42	Molybdenum	Mo	98	97.905407
43	Technetium	Tc	98	97.907203
44	Ruthenium	Ru	102	101.904349
45	Rhodium	Rh	103	102.90550
46	Palladium	Pd	106	105.90348
47	Silver	Ag	107	106.905088
			109	108.904755
48	Cadmium	Cd	106	105.90546
			114	113.903358
49	Indium	In	115	114.903876
50	Tin	Sn	120	119.902197
51	Antimony	Sb	121	120.903820
52	Tellurium	Te	130	129.906229
53	Iodine	I	127	126.904475
			131	130.90611
54	Xenon	Xe	132	131.904141
			136	135.90722
			140	139.92143
55	Cesium	Cs	133	132.90544
			140	139.91707
56	Barium	Ba	137	136.90582
			138	137.90524
			140	139.91058

APPENDIX E ATOMIC MASSES (continued)

Atomic Number	Element	Symbol	Mass Number	Atomic Mass (u)
			141	140.91413
			144	143.92267
57	Lanthanum	La	139	138.906347
			140	139.90947
58	Cerium	Ce	140	139.905434
59	Praseodymium	Pr	141	140.907648
60	Neodymium	Nd	142	141.907719
61	Promethium	Pm	145	144.91275
62	Samarium	Sm	152	151.919729
63	Europium	Eu	153	152.921226
64	Gadolinium	Gd	158	157.924100
65	Terbium	Tb	159	158.925344
66	Dysprosium	Dy	164	163.929173
67	Holmium	Ho	165	164.930320
68	Erbium	Er	166	165.930292
69	Thulium	Tm	169	168.934213
70	Ytterbium	Yb	174	173.938861
71	Lutecium	Lu	175	174.940771
72	Hafnium	Hf	180	179.946548
73	Tantalum	Ta	181	180.947994
74	Tungsten	W	184	183.950929
75	Rhenium	Re	187	186.955747
76	Osmium	Os	191	190.96101
			192	191.961469
77	Iridium	Ir	191	190.960585
			193	192.962916
78	Platinum	Pt	195	194.964766
79	Gold	Au	197	196.966543
80	Mercury	Hg	202	201.970617
81	Thalium	Tl	205	204.974401
			208	207.98200
82	Lead	Pb	204	203.973020
			206	205.974440
			207	206.975871
			208	207.976627
			209	208.981078
			210	209.984176
			211	210.988736
			212	211.991881
			214	213.999801
83	Bismuth	Bi	209	208.980373
			211	210.98725
84	Polonium	Po	210	209.982848
			218	218.008965
85	Astatine	At	218	218.00868
86	Radon	Rn	220	220.011368
			222	222.017570
87	Francium	Fr	223	223.019736
88	Radium	Ra	224	224.020199
			226	226.025408
			228	228.031072
89	Actinium	Ac	225	225.023218
			227	227.027751
90	Thorium	Th	228	228.02872
			232	232.038054
91	Proactinium	Pa	231	231.035880
92	Uranium	U	232	232.03713
			233	233.039629

APPENDIX E ATOMIC MASSES (continued)

Atomic Number	Element	Symbol	Mass Number	Atomic Mass (u)
			235	235.043924
			236	236.045563
			238	238.050785
			239	239.054295
93	Neptunium	Np	237	237.048172
			239	239.052936
94	Plutonium	Pu	239	239.052157
95	Americium	Am	243	243.061374
96	Curium	Cm	245	245.065484
97	Berkelium	Bk	247	247.07030
98	Californium	Cf	249	249.074845
99	Einsteinium	Es	254	254.08802
100	Fermium	Fm	253	253.085173
101	Mendelevium	Md	255	255.09109
102	Nobelium	No	255	255.09323
103	Lawrencium	Lr	257	257.0995
104	Rutherfordium	Rf	261	261.1086
105	Hahnium	Ha	262	262.1138
106			263	263.1182
107			261	261.1217
108			264	264.129
109			266	266.1378

* Data are based on *Nuclides and Isotopes*, 14th Edition, General Electric Co., and *Table of Isotopes*, C. M. Lederer and V. S. Shirley, Eds., 7th Ed., John Wiley & Sons, Inc., 1978.