

## Atomic Weights and Isotopic Compositions for All Elements

<u>Isotope</u>		<u>Relative Atomic Mass</u>	<u>Isotopic Composition</u>	<u>Standard Atomic Weight</u>	<u>Notes</u>		
1	H	1	1.007 825 032 07(10)	0.999 885(70)	1.007 94(7)	g,m,r,b,w	
	D	2	2.014 101 777 8(4)				0.000 115(70)
	T	3	3.016 049 2777(25)				
2	He	3	3.016 029 3191(26)	0.000 001 34(3)	4.002 602(2)	g,r,a	
		4	4.002 603 254 15(6)	0.999 998 66(3)			
3	Li	6	6.015 122 795(16)	0.0759(4)	6.941(2)	g,m,r,c,i	
		7	7.016 004 55(8)	0.9241(4)			
4	Be	9	9.012 182 2(4)	1.0000	9.012 182(3)		
5	B	10	10.012 937 0(4)	0.199(7)	10.811(7)	g,m,r	
		11	11.009 305 4(4)	0.801(7)			
6	C	12	12.000 000 0(0)	0.9893(8)	12.0107(8)	g,r	
		13	13.003 354 8378(10)	0.0107(8)			
		14	14.003 241 989(4)				
7	N	14	14.003 074 004 8(6)	0.996 36(20)	14.0067(2)	g,r,a,d	
		15	15.000 108 898 2(7)	0.003 64(20)			
8	O	16	15.994 914 619 56(16)	0.997 57(16)	15.9994(3)	g,r,e,w	
		17	16.999 131 70(12)	0.000 38(1)			
		18	17.999 161 0(7)	0.002 05(14)			
9	F	19	18.998 403 22(7)	1.0000	18.998 403 2(5)		
10	Ne	20	19.992 440 1754(19)	0.9048(3)	20.1797(6)	g,m,a	
		21	20.993 846 68(4)	0.0027(1)			
		22	21.991 385 114(19)	0.0925(3)			
11	Na	23	22.989 769 2809(29)	1.0000	22.989 769 28(2)		
12	Mg	24	23.985 041 700(14)	0.7899(4)	24.3050(6)		
		25	24.985 836 92(3)	0.1000(1)			
		26	25.982 592 929(30)	0.1101(3)			
13	Al	27	26.981 538 63(12)	1.0000	26.981 538 6(8)		
14	Si	28	27.976 926 5325(19)	0.922 23(19)	28.0855(3)	r	

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	29	28.976 494 700(22)	0.046 85(8)		
	30	29.973 770 17(3)	0.030 92(11)		
15 P	31	30.973 761 63(20)	1.0000	30.973 762(2)	
16 S	32	31.972 071 00(15)	0.9499(26)	32.065(5)	g,r
	33	32.971 458 76(15)	0.0075(2)		
	34	33.967 866 90(12)	0.0425(24)		
	36	35.967 080 76(20)	0.0001(1)		
17 Cl	35	34.968 852 68(4)	0.7576(10)	35.453(2)	m
	37	36.965 902 59(5)	0.2424(10)		
18 Ar	36	35.967 545 106(29)	0.003 365(30)	39.948(1)	g,r,a
	38	37.962 732 4(4)	0.000 632(5)		
	40	39.962 383 1225(29)	0.996 003(30)		
19 K	39	38.963 706 68(20)	0.932 581(44)	39.0983(1)	g
	40	39.963 998 48(21)	0.000 117(1)		
	41	40.961 825 76(21)	0.067 302(44)		
20 Ca	40	39.962 590 98(22)	0.969 41(156)	40.078(4)	g,f
	42	41.958 618 01(27)	0.006 47(23)		
	43	42.958 766 6(3)	0.001 35(10)		
	44	43.955 481 8(4)	0.020 86(110)		
	46	45.953 6926(24)	0.000 04(3)		
	48	47.952 534(4)	0.001 87(21)		
21 Sc	45	44.955 911 9(9)	1.0000	44.955 912(6)	
22 Ti	46	45.952 631 6(9)	0.0825(3)	47.867(1)	
	47	46.951 763 1(9)	0.0744(2)		
	48	47.947 946 3(9)	0.7372(3)		
	49	48.947 870 0(9)	0.0541(2)		
	50	49.944 791 2(9)	0.0518(2)		
23 V	50	49.947 1585(11)	0.002 50(4)	50.9415(1)	
	51	50.943 9595(11)	0.997 50(4)		
24 Cr	50	49.946 0442(11)	0.043 45(13)	51.9961(6)	
	52	51.940 507 5(8)	0.837 89(18)		

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	53	52.940 649 4(8)	0.095 01(17)		
	54	53.938 880 4(8)	0.023 65(7)		
25 Mn	55	54.938 045 1(7)	1.0000	54.938 045(5)	
26 Fe	54	53.939 610 5(7)	0.058 45(35)	55.845(2)	
	56	55.934 937 5(7)	0.917 54(36)		
	57	56.935 394 0(7)	0.021 19(10)		
	58	57.933 275 6(8)	0.002 82(4)		
27 Co	59	58.933 195 0(7)	1.0000	58.933 195(5)	
28 Ni	58	57.935 342 9(7)	0.680 769(89)	58.6934(4)	
	60	59.930 786 4(7)	0.262 231(77)		
	61	60.931 056 0(7)	0.011 399(6)		
	62	61.928 345 1(6)	0.036 345(17)		
	64	63.927 966 0(7)	0.009 256(9)		
29 Cu	63	62.929 597 5(6)	0.6915(15)	63.546(3)	r
	65	64.927 789 5(7)	0.3085(15)		
30 Zn	64	63.929 142 2(7)	0.482 68(321)	65.38(2)	
	66	65.926 0334(10)	0.279 75(77)		
	67	66.927 1273(10)	0.041 02(21)		
	68	67.924 8442(10)	0.190 24(123)		
	70	69.925 3193(21)	0.006 31(9)		
31 Ga	69	68.925 5736(13)	0.601 08(9)	69.723(1)	
	71	70.924 7013(11)	0.398 92(9)		
32 Ge	70	69.924 2474(11)	0.2038(18)	72.64(1)	
	72	71.922 0758(18)	0.2731(26)		
	73	72.923 4589(18)	0.0776(8)		
	74	73.921 1778(18)	0.3672(15)		
	76	75.921 4026(18)	0.0783(7)		
33 As	75	74.921 5965(20)	1.0000	74.921 60(2)	
34 Se	74	73.922 4764(18)	0.0089(4)	78.96(3)	
	76	75.919 2136(18)	0.0937(29)		
	77	76.919 9140(18)	0.0763(16)		

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	78 77.917 3091(18)	0.2377(28)		
	80 79.916 5213(21)	0.4961(41)		
	82 81.916 6994(22)	0.0873(22)		
35 Br	79 78.918 3371(22)	0.5069(7)	79.904(1)	
	81 80.916 2906(21)	0.4931(7)		
36 Kr	78 77.920 3648(12)	0.003 55(3)	83.798(2)	g,m,a
	80 79.916 3790(16)	0.022 86(10)		
	82 81.913 4836(19)	0.115 93(31)		
	83 82.914 136(3)	0.115 00(19)		
	84 83.911 507(3)	0.569 87(15)		
	86 85.910 610 73(11)	0.172 79(41)		
37 Rb	85 84.911 789 738(12)	0.7217(2)	85.4678(3)	g
	87 86.909 180 527(13)	0.2783(2)		
38 Sr	84 83.913 425(3)	0.0056(1)	87.62(1)	g,r,f
	86 85.909 2602(12)	0.0986(1)		
	87 86.908 8771(12)	0.0700(1)		
	88 87.905 6121(12)	0.8258(1)		
39 Y	89 88.905 8483(27)	1.0000	88.905 85(2)	
40 Zr	90 89.904 7044(25)	0.5145(40)	91.224(2)	g
	91 90.905 6458(25)	0.1122(5)		
	92 91.905 0408(25)	0.1715(8)		
	94 93.906 3152(26)	0.1738(28)		
	96 95.908 2734(30)	0.0280(9)		
41 Nb	93 92.906 3781(26)	1.0000	92.906 38(2)	
42 Mo	92 91.906 811(4)	0.1477(31)	95.96(2)	g
	94 93.905 0883(21)	0.0923(10)		
	95 94.905 8421(21)	0.1590(9)		
	96 95.904 6795(21)	0.1668(1)		
	97 96.906 0215(21)	0.0956(5)		
	98 97.905 4082(21)	0.2419(26)		
	100 99.907 477(6)	0.0967(20)		

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43 Tc	97	96.906 365(5)		[98]	
	98	97.907 216(4)			
	99	98.906 2547(21)			
44 Ru	96	95.907 598(8)	0.0554(14)	101.07(2)	g
	98	97.905 287(7)	0.0187(3)		
	99	98.905 9393(22)	0.1276(14)		
	100	99.904 2195(22)	0.1260(7)		
	101	100.905 5821(22)	0.1706(2)		
	102	101.904 3493(22)	0.3155(14)		
	104	103.905 433(3)	0.1862(27)		
45 Rh	103	102.905 504(3)	1.0000	102.905 50(2)	
46 Pd	102	101.905 609(3)	0.0102(1)	106.42(1)	g
	104	103.904 036(4)	0.1114(8)		
	105	104.905 085(4)	0.2233(8)		
	106	105.903 486(4)	0.2733(3)		
	108	107.903 892(4)	0.2646(9)		
	110	109.905 153(12)	0.1172(9)		
47 Ag	107	106.905 097(5)	0.518 39(8)	107.8682(2)	g
	109	108.904 752(3)	0.481 61(8)		
48 Cd	106	105.906 459(6)	0.0125(6)	112.411(8)	g
	108	107.904 184(6)	0.0089(3)		
	110	109.903 0021(29)	0.1249(18)		
	111	110.904 1781(29)	0.1280(12)		
	112	111.902 7578(29)	0.2413(21)		
	113	112.904 4017(29)	0.1222(12)		
	114	113.903 3585(29)	0.2873(42)		
	116	115.904 756(3)	0.0749(18)		
49 In	113	112.904 058(3)	0.0429(5)	114.818(3)	
	115	114.903 878(5)	0.9571(5)		
50 Sn	112	111.904 818(5)	0.0097(1)	118.710(7)	g,e
	114	113.902 779(3)	0.0066(1)		
	115	114.903 342(3)	0.0034(1)		

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	116 115.901 741(3)	0.1454(9)		
	117 116.902 952(3)	0.0768(7)		
	118 117.901 603(3)	0.2422(9)		
	119 118.903 308(3)	0.0859(4)		
	120 119.902 1947(27)	0.3258(9)		
	122 121.903 4390(29)	0.0463(3)		
	124 123.905 2739(15)	0.0579(5)		
51 Sb	121 120.903 8157(24)	0.5721(5)	121.760(1)	g
	123 122.904 2140(22)	0.4279(5)		
52 Te	120 119.904 020(10)	0.0009(1)	127.60(3)	g,h
	122 121.903 0439(16)	0.0255(12)		
	123 122.904 2700(16)	0.0089(3)		
	124 123.902 8179(16)	0.0474(14)		
	125 124.904 4307(16)	0.0707(15)		
	126 125.903 3117(16)	0.1884(25)		
	128 127.904 4631(19)	0.3174(8)		
	130 129.906 2244(21)	0.3408(62)		
53 I	127 126.904 473(4)	1.0000	126.904 47(3)	
54 Xe	124 123.905 8930(20)	0.000 952(3)	131.293(6)	g,m,a
	126 125.904 274(7)	0.000 890(2)		
	128 127.903 5313(15)	0.019 102(8)		
	129 128.904 779 4(8)	0.264 006(82)		
	130 129.903 508 0(8)	0.040 710(13)		
	131 130.905 0824(10)	0.212 324(30)		
	132 131.904 1535(10)	0.269 086(33)		
	134 133.905 394 5(9)	0.104 357(21)		
	136 135.907 219(8)	0.088 573(44)		
55 Cs	133 132.905 451 933(24)	1.0000	132.905 451 9(2)	
56 Ba	130 129.906 3208(30)	0.001 06(1)	137.327(7)	
	132 131.905 0613(11)	0.001 01(1)		
	134 133.904 508 4(4)	0.024 17(18)		
	135 134.905 688 6(4)	0.065 92(12)		
	136 135.904 575 9(4)	0.078 54(24)		

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	137 136.905 827 4(5)	0.112 32(24)		
	138 137.905 247 2(5)	0.716 98(42)		
57 La	138 137.907 112(4)	0.000 90(1)	138.905 47(7)	g
	139 138.906 3533(26)	0.999 10(1)		
58 Ce	136 135.907 172(14)	0.001 85(2)	140.116(1)	g,f
	138 137.905 991(11)	0.002 51(2)		
	140 139.905 4387(26)	0.884 50(51)		
	142 141.909 244(3)	0.111 14(51)		
59 Pr	141 140.907 6528(26)	1.0000	140.907 65(2)	
60 Nd	142 141.907 7233(25)	0.272(5)	144.242(3)	g,f
	143 142.909 8143(25)	0.122(2)		
	144 143.910 0873(25)	0.238(3)		
	145 144.912 5736(25)	0.083(1)		
	146 145.913 1169(25)	0.172(3)		
	148 147.916 893(3)	0.057(1)		
	150 149.920 891(3)	0.056(2)		
61 Pm	145 144.912 749(3)		[145]	
	147 146.915 1385(26)			
62 Sm	144 143.911 999(3)	0.0307(7)	150.36(2)	g
	147 146.914 8979(26)	0.1499(18)		
	148 147.914 8227(26)	0.1124(10)		
	149 148.917 1847(26)	0.1382(7)		
	150 149.917 2755(26)	0.0738(1)		
	152 151.919 7324(27)	0.2675(16)		
	154 153.922 2093(27)	0.2275(29)		
63 Eu	151 150.919 8502(26)	0.4781(6)	151.964(1)	g
	153 152.921 2303(26)	0.5219(6)		
64 Gd	152 151.919 7910(27)	0.0020(1)	157.25(3)	g
	154 153.920 8656(27)	0.0218(3)		
	155 154.922 6220(27)	0.1480(12)		
	156 155.922 1227(27)	0.2047(9)		
	157 156.923 9601(27)	0.1565(2)		

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	158 157.924 1039(27)	0.2484(7)		
	160 159.927 0541(27)	0.2186(19)		
65 Tb	159 158.925 3468(27)	1.0000	158.925 35(2)	
66 Dy	156 155.924 283(7)	0.000 56(3)	162.500(1)	g
	158 157.924 409(4)	0.000 95(3)		
	160 159.925 1975(27)	0.023 29(18)		
	161 160.926 9334(27)	0.188 89(42)		
	162 161.926 7984(27)	0.254 75(36)		
	163 162.928 7312(27)	0.248 96(42)		
	164 163.929 1748(27)	0.282 60(54)		
67 Ho	165 164.930 3221(27)	1.0000	164.930 32(2)	
68 Er	162 161.928 778(4)	0.001 39(5)	167.259(3)	g
	164 163.929 200(3)	0.016 01(3)		
	166 165.930 2931(27)	0.335 03(36)		
	167 166.932 0482(27)	0.228 69(9)		
	168 167.932 3702(27)	0.269 78(18)		
	170 169.935 4643(30)	0.149 10(36)		
69 Tm	169 168.934 2133(27)	1.0000	168.934 21(2)	
70 Yb	168 167.933 897(5)	0.0013(1)	173.054(5)	g
	170 169.934 7618(26)	0.0304(15)		
	171 170.936 3258(26)	0.1428(57)		
	172 171.936 3815(26)	0.2183(67)		
	173 172.938 2108(26)	0.1613(27)		
	174 173.938 8621(26)	0.3183(92)		
	176 175.942 5717(28)	0.1276(41)		
71 Lu	175 174.940 7718(23)	0.9741(2)	174.9668(1)	g
	176 175.942 6863(23)	0.0259(2)		
72 Hf	174 173.940 046(3)	0.0016(1)	178.49(2)	f
	176 175.941 4086(24)	0.0526(7)		
	177 176.943 2207(23)	0.1860(9)		
	178 177.943 6988(23)	0.2728(7)		
	179 178.945 8161(23)	0.1362(2)		



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	180 179.946 5500(23)	0.3508(16)		
73 Ta	180 179.947 4648(24)	0.000 12(2)	180.947 88(2)	
	181 180.947 9958(19)	0.999 88(2)		
74 W	180 179.946 704(4)	0.0012(1)	183.84(1)	
	182 181.948 204 2(9)	0.2650(16)		
	183 182.950 223 0(9)	0.1431(4)		
	184 183.950 931 2(9)	0.3064(2)		
	186 185.954 3641(19)	0.2843(19)		
75 Re	185 184.952 9550(13)	0.3740(2)	186.207(1)	
	187 186.955 7531(15)	0.6260(2)		
76 Os	184 183.952 4891(14)	0.0002(1)	190.23(3)	g,f
	186 185.953 8382(15)	0.0159(3)		
	187 186.955 7505(15)	0.0196(2)		
	188 187.955 8382(15)	0.1324(8)		
	189 188.958 1475(16)	0.1615(5)		
	190 189.958 4470(16)	0.2626(2)		
	192 191.961 4807(27)	0.4078(19)		
77 Ir	191 190.960 5940(18)	0.373(2)	192.217(3)	
	193 192.962 9264(18)	0.627(2)		
78 Pt	190 189.959 932(6)	0.000 14(1)	195.084(9)	
	192 191.961 0380(27)	0.007 82(7)		
	194 193.962 680 3(9)	0.329 67(99)		
	195 194.964 791 1(9)	0.338 32(10)		
	196 195.964 951 5(9)	0.252 42(41)		
	198 197.967 893(3)	0.071 63(55)		
79 Au	197 196.966 568 7(6)	1.0000	196.966 569(4)	
80 Hg	196 195.965 833(3)	0.0015(1)	200.59(2)	
	198 197.966 769 0(4)	0.0997(20)		
	199 198.968 279 9(4)	0.1687(22)		
	200 199.968 326 0(4)	0.2310(19)		
	201 200.970 302 3(6)	0.1318(9)		
	202 201.970 643 0(6)	0.2986(26)		

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	204	203.973 493 9(4)	0.0687(15)		
81	Tl	203 202.972 3442(14)	0.2952(1)	204.3833(2)	
	205	204.974 4275(14)	0.7048(1)		
82	Pb	204 203.973 0436(13)	0.014(1)	207.2(1)	g,r,f
	206	205.974 4653(13)	0.241(1)		
	207	206.975 8969(13)	0.221(1)		
	208	207.976 6521(13)	0.524(1)		
83	Bi	209 208.980 3987(16)	1.0000	208.980 40(1)	
84	Po	209 208.982 4304(20)		[209]	
	210	209.982 8737(13)			
85	At	210 209.987 148(8)		[210]	
	211	210.987 4963(30)			
86	Rn	211 210.990 601(7)		[222]	
	220	220.011 3940(24)			
	222	222.017 5777(25)			
87	Fr	223 223.019 7359(26)		[223]	
88	Ra	223 223.018 5022(27)		[226]	
	224	224.020 2118(24)			
	226	226.025 4098(25)			
	228	228.031 0703(26)			
89	Ac	227 227.027 7521(26)		[227]	
90	Th	230 230.033 1338(19)			
	232	232.038 0553(21)	1.0000	232.038 06(2)	g
91	Pa	231 231.035 8840(24)	1.0000	231.035 88(2)	
92	U	233 233.039 6352(29)			
	234	234.040 9521(20)	0.000 054(5)	238.028 91(3)	g,m,c
	235	235.043 9299(20)	0.007 204(6)		
	236	236.045 5680(20)			
	238	238.050 7882(20)	0.992 742(10)		

<u>Isotope</u>	<u>Relative Atomic Mass</u>	<u>Isotopic Composition</u>	<u>Standard Atomic Weight</u>	<u>Notes</u>
93 Np	236 236.046 570(50) 237 237.048 1734(20)		[237]	
94 Pu	238 238.049 5599(20) 239 239.052 1634(20) 240 240.053 8135(20) 241 241.056 8515(20) 242 242.058 7426(20) 244 244.064 204(5)		[244]	
95 Am	241 241.056 8291(20) 243 243.061 3811(25)		[243]	
96 Cm	243 243.061 3891(22) 244 244.062 7526(20) 245 245.065 4912(22) 246 246.067 2237(22) 247 247.070 354(5) 248 248.072 349(5)		[247]	
97 Bk	247 247.070 307(6) 249 249.074 9867(28)		[247]	
98 Cf	249 249.074 8535(24) 250 250.076 4061(22) 251 251.079 587(5) 252 252.081 626(5)		[251]	
99 Es	252 252.082 980(50)		[252]	
100 Fm	257 257.095 105(7)		[257]	
101 Md	258 258.098 431(5) 260 260.103 65(34)#		[258]	
102 No	259 259.101 03(11)#		[259]	
103 Lr	262 262.109 63(22)#		[262]	
104 Rf	265 265.116 70(46)#		[265]	
105 Db	268 268.125 45(57)#		[268]	

<u>Isotope</u>	<u>Relative Atomic Mass</u>	<u>Isotopic Composition</u>	<u>Standard Atomic Weight</u>	<u>Notes</u>
106 Sg 271	271.133 47(70)#		[271]	
107 Bh 272	272.138 03(65)#		[272]	
108 Hs 270	270.134 65(31)#		[270]	
109 Mt 276	276.151 16(73)#		[276]	
110 Ds 281	281.162 06(78)#		[281]	
111 Rg 280	280.164 47(80)#		[280]	
112 Cn 285	285.174 11(78)#		[285]	
113 Uut 284	284.178 08(86)#		[284]	
114 Uuq 289	289.187 28(79)#		[289]	
115 Uup 288	288.192 49(92)#		[288]	
116 Uuh 293			[293]	
117 Uus 292	292.207 55(101)#		[292]	
118 Uuo 294			[294]	

