

Atomic weights and isotopic compositions for all elements www.vaxasoftware.com

Z	Sym	A	Isotope atomic mass u	Natural abundance %	Average atomic mass u	Half-life	Decay product
1	H	1	1.007 825 032 1(4)	99.9885(70)	1.007 94(7)	stable	He-3
	D	2	2.014 101 778 0(4)	0.0115(70)		stable	
	T	3	3.016 049 2675(11)			12.32(2) yr	
2	He	3	3.016 029 309 7(9)	0.000 137(3)	4.002 602(2)	stable	
		4	4.002 603 2497(10)	99.999 863(3)	stable		
3	Li	6	6.015 122 3(5)	7.59(4)	6.941(2)	stable	
		7	7.016 004 0(5)	92.41(4)	stable		
4	Be	9	9.012 182 1(4)	100	9.012 182(3)	stable	
5	B	10	10.012 937 0(4)	19.9(7)	10.811(7)	stable	
		11	11.009 305 4(4)	80.1(7)	stable		
6	C	12	12.000 000 0(0)	98.93(8)	12.0107(8)	stable	N-14
		13	13.003 354 8378(10)	1.07(8)	stable		
		14	14.003 241 989(4)		5730(30) yr		
7	N	14	14.003 074 005 2(9)	99.632(7)	14.0067(2)	stable	
		15	15.000 108 898 2(7)	0.368(7)	stable		
8	O	16	15.994 914 6221(15)	99.757(16)	15.9994(3)	stable	
		17	16.999 131 50(22)	0.038(1)	stable		
		18	17.999 160 4(9)	0.205(14)	stable		
9	F	19	18.998 403 20(7)	100	18.998 403 2(5)	stable	
10	Ne	20	19.992 440 1759(20)	90.48(3)	20.1797(6)	stable	
		21	20.993 846 74(4)	0.27(1)	stable		
		22	21.991 385 51(23)	9.25(3)	stable		
11	Na	23	22.989 769 28(2)	100	22.989 769 28(2)	stable	
12	Mg	24	23.985 041 90(20)	78.99(4)	24.3050(6)	stable	
		25	24.985 837 02(20)	10.00(1)	stable		
		26	25.982 593 04(21)	11.01(3)	stable		
13	Al	27	26.981 538 44(14)	100	26.981 538(2)	stable	
14	Si	28	27.976 926 5327(20)	92.2297(7)	28.0855(3)	stable	
		29	28.976 494 72(3)	4.6832(5)	stable		
		30	29.973 770 22(5)	3.0872(5)	stable		
15	P	31	30.973 761 51(20)	100	30.973 761(2)	stable	
16	S	32	31.972 070 69(12)	94.93(31)	32.065(5)	stable	
		33	32.971 458 50(12)	0.76(2)	stable		
		34	33.967 866 83(11)	4.29(28)	stable		
		36	35.967 080 88(25)	0.02(1)	stable		
17	Cl	35	34.968 852 71(4)	75.78(4)	35.453(2)	stable	
		37	36.965 902 60(5)	24.22(4)	stable		
18	Ar	36	35.967 546 28(27)	0.3365(30)	39.948(1)	stable	
		38	37.962 732 2(5)	0.0632(5)	stable		
		40	39.962 383 123(3)	99.6003(30)	stable		

Z	Sym	A	Isotope atomic mass u	Natural abundance %	Average atomic mass u	Half-life	Decay product
19	K	39	38.963 706 9(3)	93.2581(44)	39.0983(1)	stable	Ca-40 Ar-40
		40	39.963 998 67(29)	0.0117(1)		$1.248(3)\cdot 10^9$ yr	
		41	40.961 825 97(28)	6.7302(44)		stable	
20	Ca	40	39.962 591 2(3)	96.941(156)	40.078(4)	stable	
		42	41.958 618 3(4)	0.647(23)		stable	
		43	42.958 766 8(5)	0.135(10)		stable	
		44	43.955 481 1(9)	2.086(110)		stable	
		46	45.953 6928(25)	0.004(3)		stable	
		48	47.952 534(4)	0.187(21)		$4.3(38)\cdot 10^{19}$ yr	
21	Sc	45	44.955 9102(12)	100	44.955 910(8)	stable	
22	Ti	46	45.952 6295(12)	8.25(3)	47.867(1)	stable	
		47	46.951 7638(10)	7.44(2)		stable	
		48	47.947 9471(10)	73.72(3)		stable	
		49	48.947 8708(10)	5.41(2)		stable	
		50	49.944 7921(11)	5.18(2)		stable	
23	V	50	49.947 1628(14)	0.250(4)	50.9415(1)	$1.5\cdot 10^{17}$ yr	Ti-50, Cr-50
		51	50.943 9637(14)	99.750(4)		stable	
24	Cr	50	49.946 0496(14)	4.345(13)	51.9961(6)	stable	
		52	51.940 5119(15)	83.789(18)		stable	
		53	52.940 6538(15)	9.501(17)		stable	
		54	53.938 8849(15)	2.365(7)		stable	
25	Mn	55	54.938 0496(14)	100	54.938 049(9)	stable	
26	Fe	54	53.939 6148(14)	5.845(35)	55.845(2)	stable	
		56	55.934 9421(15)	91.754(36)		stable	
		57	56.935 3987(15)	2.119(10)		stable	
		58	57.933 2805(15)	0.282(4)		stable	
27	Co	59	58.933 2002(15)	100	58.933 200(9)	stable	
28	Ni	58	57.935 3479(15)	68.0769(89)	58.6934(2)	stable	
		60	59.930 7906(15)	26.2231(77)		stable	
		61	60.931 0604(15)	1.1399(6)		stable	
		62	61.928 3488(15)	3.6345(17)		stable	
		64	63.927 9696(16)	0.9256(9)		stable	
29	Cu	63	62.929 6011(15)	69.15(15)	63.546(3)	stable	
		65	64.927 7937(19)	30.85(15)		stable	
30	Zn	64	63.929 1466(18)	48.63(60)	65.409(4)	stable	
		66	65.926 0368(16)	27.90(27)		stable	
		67	66.927 1309(17)	4.10(13)		stable	
		68	67.924 8476(17)	18.75(51)		stable	
		70	69.925 325(4)	0.62(3)		stable	

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31	Ga	69	68.925 581(3)	60.108(9)	69.723(1)	stable	
		71	70.924 7050(19)	39.892(9)		stable	
32	Ge	70	69.924 2504(19)	20.84(87)	72.64(1)	stable	
		72	71.922 0762(16)	27.54(34)		stable	
		73	72.923 4594(16)	7.73(5)		stable	
		74	73.921 1782(16)	36.28(73)		stable	
		76	75.921 4027(16)	7.61(38)		1.78·10 ²¹ yr	Se-76
33	As	75	74.921 5964(18)	100	74.921 60(2)	stable	
34	Se	74	73.922 4766(16)	0.89(4)	78.96(3)	stable	
		76	75.919 2141(16)	9.37(29)		stable	
		77	76.919 9146(16)	7.63(16)		stable	
		78	77.917 3095(16)	23.77(28)		stable	
		80	79.916 5218(20)	49.61(41)		stable	
		82	81.916 7000(22)	8.73(22)		9.7(5)·10 ¹⁹ yr	Kr-82
35	Br	79	78.918 3376(20)	50.69(7)	79.904(1)	stable	
		81	80.916 291(3)	49.31(7)		stable	
36	Kr	78	77.920 386(7)	0.35(1)	83.798(2)	stable	
		80	79.916 378(4)	2.28(6)		stable	
		82	81.913 4846(28)	11.58(14)		stable	
		83	82.914 136(3)	11.49(6)		stable	
		84	83.911 507(3)	57.00(4)		stable	
		86	85.910 6103(12)	17.30(22)		stable	
37	Rb	85	84.911 7893(25)	72.17(2)	85.4678(3)	stable	
		87	86.909 1835(27)	27.83(2)		4.923(22)·10 ¹⁰ yr	Sr-87
38	Sr	84	83.913 425(4)	0.56(1)	87.62(1)	stable	
		86	85.909 2624(24)	9.86(1)		stable	
		87	86.908 8793(24)	7.00(1)		stable	
		88	87.905 6143(24)	82.58(1)		stable	
39	Y	89	88.905 8479(25)	100	88.905 85(2)	stable	
40	Zr	90	89.904 7037(23)	51.45(40)	91.224(2)	stable	
		91	90.905 6450(23)	11.22(5)		stable	
		92	91.905 0401(23)	17.15(8)		stable	
		94	93.906 3158(25)	17.38(28)		stable	
		96	95.908 276(3)	2.80(9)		2.0(4)·10 ¹⁹ yr	Mo-96
41	Nb	93	92.906 3775(24)	100	92.906 38(2)	stable	
42	Mo	92	91.906 810(4)	14.84(35)	95.94(2)	stable	
		94	93.905 0876(20)	9.25(12)		stable	
		95	94.905 8415(20)	15.92(13)		stable	
		96	95.904 6789(20)	16.68(2)		stable	
		97	96.906 0210(20)	9.55(8)		stable	
		98	97.905 4078(20)	24.13(31)		stable	
		100	99.907 477(6)	9.63(23)		8.5(5)·10 ¹⁸	Ru-100

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43	Tc	97	96.906 365(5)		[98]	2.6·10 ⁶ yr	Mo-97
		98	97.907 216(4)			4.2(3)·10 ⁶ yr	Ru-98
		99	98.906 2546(21)			2.111(12)·10 ⁵ yr	Ru-99
44	Ru	96	95.907 598(8)	5.54(14)	101.07(2)	stable	
		98	97.905 287(7)	1.87(3)		stable	
		99	98.905 9393(21)	12.76(14)		stable	
		100	99.904 2197(22)	12.60(7)		stable	
		101	100.905 5822(22)	17.06(2)		stable	
		102	101.904 3495(22)	31.55(14)		stable	
		104	103.905 430(4)	18.62(27)		stable	
45	Rh	103	102.905 504(3)	100	102.905 50(2)	stable	
46	Pd	102	101.905 608(3)	1.02(1)	106.42(1)	stable	
		104	103.904 035(5)	11.14(8)		stable	
		105	104.905 084(5)	22.33(8)		stable	
		106	105.903 483(5)	27.33(3)		stable	
		108	107.903 894(4)	26.46(9)		stable	
		110	109.905 152(12)	11.72(9)		stable	
47	Ag	107	106.905 093(6)	51.839(8)	107.8682(2)	stable	
		109	108.904 756(3)	48.161(8)		stable	
48	Cd	106	105.906 458(6)	1.25(6)	112.411(8)	stable	
		108	107.904 183(6)	0.89(3)		stable	
		110	109.903 006(3)	12.49(18)		stable	
		111	110.904 182(3)	12.80(12)		stable	
		112	111.902 7572(30)	24.13(21)		stable	
		113	112.904 4009(30)	12.22(12)		7.7(3)·10 ¹⁵ yr	In-113
		114	113.903 3581(30)	28.73(42)		stable	
		116	115.904 755(3)	7.49(18)		3.1(4)·10 ¹⁹ yr	Sn-116
49	In	113	112.904 061(4)	4.29(5)	114.818(3)	stable	
		115	114.903 878(5)	95.71(5)		4.41(25)·10 ¹⁴ yr	Sn-115
50	Sn	112	111.904 821(5)	0.97(1)	118.710(7)	stable	
		114	113.902 782(3)	0.66(1)		stable	
		115	114.903 346(3)	0.34(1)		stable	
		116	115.901 744(3)	14.54(9)		stable	
		117	116.902 954(3)	7.68(7)		stable	
		118	117.901 606(3)	24.22(9)		stable	
		119	118.903 309(3)	8.59(4)		stable	
		120	119.902 1966(27)	32.58(9)		stable	
		122	121.903 4401(29)	4.63(3)		stable	
		124	123.905 2746(15)	5.79(5)		stable	
51	Sb	121	120.903 8180(24)	57.21(5)	121.760(1)	stable	
		123	122.904 2157(22)	42.79(5)		stable	

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52	Te	120	119.904 020(11)	0.09(1)	127.60(3)	stable	Sb-123	
		122	121.903 0471(20)	2.55(12)		stable		
		123	122.904 2730(19)	0.89(3)		$> 6 \cdot 10^{14}$ yr		
		124	123.902 8195(16)	4.74(14)		stable		
		125	124.904 4247(20)	7.07(15)		stable		
		126	125.903 3055(20)	18.84(25)		stable		
		128	127.904 4614(19)	31.74(8)		$2.2(3) \cdot 10^{24}$ yr		Xe-128
		130	129.906 2228(21)	34.08(62)		$7.9(10) \cdot 10^{20}$ yr		Xe-130
53	I	127	126.904 468(4)	100	126.904 47(3)	stable		
54	Xe	124	123.905 8958(21)	0.0952(3)	131.293(6)	stable		
		126	125.904 269(7)	0.0890(2)		stable		
		128	127.903 5304(15)	1.9102(8)		stable		
		129	128.904 779 5(9)	26.4006(82)		stable		
		130	129.903 5080(8)	4.0710(13)		stable		
		131	130.905 0819(10)	21.2324(30)		stable		
		132	131.904 1545(12)	26.9086(33)		stable		
		134	133.905 394 5(9)	10.4357(21)		stable		
136	135.907 220(8)	8.8573(44)	stable					
55	Cs	133	132.905 447(3)	100	132.905 45(2)	stable		
56	Ba	130	129.906 310(7)	0.106(1)	137.327(7)	stable		
		132	131.905 056(3)	0.101(1)		stable		
		134	133.904 503(3)	2.417(18)		stable		
		135	134.905 683(3)	6.592(12)		stable		
		136	135.904 570(3)	7.854(24)		stable		
		137	136.905 821(3)	11.232(24)		stable		
		138	137.905 241(3)	71.698(42)		stable		
57	La	138	137.907 112(4)	0.090(1)	138.90547(7)	$1.02(1) \cdot 10^{11}$ yr	Ba-138 Ce-138	
		139	138.906 348(3)	99.910(1)		stable		
58	Ce	136	135.907 140(50)	0.185(2)	140.116(1)	stable		
		138	137.905 986(11)	0.251(2)		stable		
		140	139.905 434(3)	88.450(51)		stable		
		142	141.909 240(4)	11.114(51)		stable		
59	Pr	141	140.907 6528(26)	100	140.907 65(2)	stable		
60	Nd	142	141.907 719(3)	27.2(5)	144.242(3)	stable	Ce-140	
		143	142.909 810(3)	12.2(2)		stable		
		144	143.910 083(3)	23.8(3)		$2.29(16) \cdot 10^{15}$ yr		
		145	144.912 569(3)	8.3(1)		stable		
		146	145.913 112(3)	17.2(3)		stable		
		148	147.916 889(3)	5.7(1)		stable		
		150	149.920 887(4)	5.6(2)		$6.7(7) \cdot 10^{18}$ yr		Sm-150

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61	Pm	145	144.912 744(4)		[145]	17.7(4) yr	Nd-145
		147	146.915 134(3)			2.2634(2) yr	Sm-147
62	Sm	144	143.911 995(4)	3.07(7)	150.36(3)	stable	
		147	146.914 893(3)	14.99(18)		1.06(2)·10 ¹¹ yr	Nd-143
		148	147.914 818(3)	11.24(10)		7(3)·10 ¹⁵ yr	Nd-144
		149	148.917 180(3)	13.82(7)		stable	
		150	149.917 271(3)	7.38(1)		stable	
		152	151.919 728(3)	26.75(16)		stable	
		154	153.922 205(3)	22.75(29)		stable	
63	Eu	151	150.919 846(3)	47.81(3)	151.964(1)	5·10 ¹⁸ yr	Pm-147
		153	152.921 226(3)	52.19(3)		stable	
64	Gd	152	151.919 788(3)	0.20(1)	157.25(3)	1.08(8)·10 ¹⁴ yr	Sm-148
		154	153.920 862(3)	2.18(3)		stable	
		155	154.922 619(3)	14.80(12)		stable	
		156	155.922 120(3)	20.47(9)		stable	
		157	156.923 957(3)	15.65(2)		stable	
		158	157.924 101(3)	24.84(7)		stable	
		160	159.927 051(3)	21.86(19)		stable	
65	Tb	159	158.925 3468(27)	100	158.925 35(2)	stable	
66	Dy	156	155.924 278(7)	0.06(1)	162.500(1)	stable	
		158	157.924 405(4)	0.10(1)		stable	
		160	159.925 194(3)	2.34(8)		stable	
		161	160.926 930(3)	18.91(24)		stable	
		162	161.926 795(3)	25.51(26)		stable	
		163	162.928 728(3)	24.90(16)		stable	
		164	163.929 171(3)	28.18(37)		stable	
67	Ho	165	164.930 319(3)	100	164.930 32(2)	stable	
68	Er	162	161.928 775(4)	0.14(1)	167.259(3)	stable	
		164	163.929 197(4)	1.61(3)		stable	
		166	165.930 290(3)	33.61(35)		stable	
		167	166.932 045(3)	22.93(17)		stable	
		168	167.932 368(3)	26.78(26)		stable	
		170	169.935 460(3)	14.93(27)		stable	
69	Tm	169	168.934 211(3)	100	168.934 21(2)	stable	
70	Yb	168	167.933 894(5)	0.13(1)	173.04(3)	stable	
		170	169.934 759(3)	3.04(15)		stable	
		171	170.936 322(3)	14.28(57)		stable	
		172	171.936 3777(30)	21.83(67)		stable	
		173	172.938 2068(30)	16.13(27)		stable	
		174	173.938 8581(30)	31.83(92)		stable	
		176	175.942 568(3)	12.76(41)		stable	

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71	Lu	175	174.940 7679(28)	97.41(2)	174.967(1)	stable	Hf-176
		176	175.942 6824(28)	2.59(2)		$3.85(7) \cdot 10^{10}$ yr	
72	Hf	174	173.940 040(3)	0.16(1)	178.49(2)	$2.0(4) \cdot 10^{15}$ yr	Yb-170
		176	175.941 4018(29)	5.26(7)		stable	
		177	176.943 2200(27)	18.60(9)		stable	
		178	177.943 6977(27)	27.28(7)		stable	
		179	178.945 8151(27)	13.62(2)		stable	
		180	179.946 5488(27)	35.08(16)		stable	
73	Ta	180	179.947 466(3)	0.012(2)	180.9479(1)	8.152(6) h	Hf-180 W-180
		181	180.947 996(3)	99.988(2)		stable	
74	W	180	179.946 706(5)	0.12(1)	183.84(1)	stable	
		182	181.948 206(3)	26.50(16)		stable	
		183	182.950 2245(29)	14.31(4)		stable	
		184	183.950 9326(29)	30.64(2)		stable	
		186	185.954 362(3)	28.43(19)		stable	
75	Re	185	184.952 9557(30)	37.40(2)	186.207(1)	stable	Os-187 Ta-183
		187	186.955 7508(30)	62.60(2)		$4.122(2) \cdot 10^{10}$ yr	
76	Os	184	183.952 491(3)	0.02(1)	190.23(3)	stable	W-182
		186	185.953 838(3)	1.59(3)		$2.0(11) \cdot 10^{15}$ yr	
		187	186.955 7479(30)	1.96(2)		stable	
		188	187.955 8360(30)	13.24(8)		stable	
		189	188.958 1449(30)	16.15(5)		stable	
		190	189.958 445(3)	26.26(2)		stable	
		192	191.961 479(4)	40.78(19)		stable	
77	Ir	191	190.960 591(3)	37.3(2)	192.217(3)	stable	
		193	192.962 924(3)	62.7(2)		stable	
78	Pt	190	189.959 930(7)	0.014(1)	195.078(2)	$6.5(3) \cdot 10^{11}$ yr	Os-186
		192	191.961 035(4)	0.782(7)		stable	
		194	193.962 664(3)	32.967(99)		stable	
		195	194.964 774(3)	33.832(10)		stable	
		196	195.964 935(3)	25.242(41)		stable	
		198	197.967 876(4)	7.163(55)		stable	
79	Au	197	196.966 552(3)	100	196.966 55(2)	stable	
80	Hg	196	195.965 815(4)	0.15(1)	200.59(2)	stable	
		198	197.966 752(3)	9.97(20)		stable	
		199	198.968 262(3)	16.87(22)		stable	
		200	199.968 309(3)	23.10(19)		stable	
		201	200.970 285(3)	13.18(9)		stable	
		202	201.970 626(3)	29.86(26)		stable	
		204	203.973 476(3)	6.87(15)		stable	

Z	Sym	A	Isotope atomic mass u	Natural abundance %	Average atomic mass u	Half-life	Decay product
81	Tl	203	202.972 329(3)	29.524(14)	204.3833(2)	stable	
		205	204.974 412(3)	70.476(14)		stable	
82	Pb	204	203.973 029(3)	1.4(1)	207.2(1)	stable	
		206	205.974 449(3)	24.1(1)		stable	
		207	206.975 881(3)	22.1(1)		stable	
		208	207.976 636(3)	52.4(1)		stable	
83	Bi	209	208.980 3987(16)	100	208.980 40(1)	1.9(2)·10 ¹⁹ yr	Tl-205
84	Po	209	208.982 416(3)		[209]	102(5) yr	Pb-205 Bi-209
		210	209.982 857(3)			138.376(2) d	Pb-206
85	At	210	209.987 148(8)		[210]	8.1(4) h	Po-210
		211	210.987 4963(30)			7.214(7) h	
86	Rn	211	210.990 585(8)		[222]	14.6 h	At-211 Po-207
		222	222.017 5705(27)			3.8235(3) d	Po-218
87	Fr	223	223.019 7307(29)		[223]	22.00(7) min	Ra-223 At-219
88	Ra	223	223.018 497(3)		[226]		
		224	224.020 2020(29)				
		226	226.025 4026(27)				
		228	228.031 0641(27)				
89	Ac	227	227.027 7470(29)		[227]		
90	Th	230	230.033 1266(22)		232.0381(1)		
		232	232.038 0504(22)	100			
91	Pa	231	231.035 8789(28)	100	231.035 88(2)		
92	U	233	233.039 628(3)		238.028 91(3)		
		234	234.040 9456(21)	0.0055(2)			
		235	235.043 9231(21)	0.7200(51)			
		236	236.045 5619(21)				
		238	238.050 7826(21)	99.2745(106)			
93	Np	237	237.048 1673(21)		[237]		
		239	239.052 9314(23)				
94	Pu	238	238.049 5534(21)		[244]		
		239	239.052 1565(21)				
		240	240.053 8075(21)				
		241	241.056 8453(21)				
		242	242.058 7368(21)				
		244	244.064 198(5)				
95	Am	241	241.056 8229(21)		[243]		
		243	243.061 3727(23)				

Z	Sym	A	Isotope atomic mass u	Natural abundance %	Average atomic mass u	Half-life	Decay product
96	Cm	243	243.061 3822(24)		[247]		
		244	244.062 7463(21)				
		245	245.065 4856(29)				
		246	246.067 2176(24)				
		247	247.070 347(5)				
		248	248.072 342(5)				
97	Bk	247	247.070 299(6)		[247]		
		249	249.074 980(3)				
98	Cf	249	249.074 847(3)		[251]		
		250	250.076 4000(24)				
		251	251.079 580(5)				
		252	252.081 620(5)				
99	Es	252	252.082 970(50)		[252]		
100	Fm	257	257.095 099(7)		[257]		
101	Md	256	256.094 050(60)		[258]		
		258	258.098 425(5)				51.3 d
102	No	251	251.08901(19)		[251]	1.7 s	
103	Lr	262	262.109 63(22)		[262]	216 min	
104	Rf	261	261.108 77(3)		[261]	81 s	
105	Db	268	268.12545(57)		[268]	32 h	
106	Sg	271	271.13347(70)		[271]	2.4 min	
107	Bh	274	274.14244(84)		[274]	54 s	
108	Hs	269	269.13406(13)		[269]	9.7 s	
109	Mt	278	278.15481(90)		[278]	7.6 s	
110	Ds	281	281.16206(78)		[281]	9.6 s	
111	Rg	281	281.16537(100)		[281]	26 s	
112	Cn	285	285.17411(78)		[285]	29 s	