Table 5 of “Atomic weights of the elements: Review 2000”, de Laeter, J. R., Böhlke, J. K., De Bièvre, P., Hidaka, H., Peiser, H. S., Rosman, K. J. R., and Taylor, P. D. P., *Pure Appl. Chem.* **75**, 683-800 (2003).

Z	**E**	**M**	**Range of Natural Variations (mole fraction)**	**Anno-tation**	**Best Measurement from a Single Terrestrial Source (mole fraction)**	**Ref.**	**Available Reference Materials[a]**	**Representative Isotopic Composition (mole fraction)**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	H	1	0.999 816 - 0.999 974	m,r	0.999 844 26(5) 2s C	[1]	VSMOW*	0.999 885(70)
		2	0.000 026 - 0.000 184		0.000 155 74(5)		CEA	0.000 115(70)[b]
							IAEA	
							NIST	
2	He	3	4.6×10^{-10} - 0.000	g,r	0.000 001 343(13)1sC	[2]	Air*	0.000 001 34(3)
		4	0.999 959 - 1		0.999 998 657(13)			0.999 998 66(3)
								(in air)
3	Li	6	0.077 14 - 0.072 25	m,r	0.075 89(24) 2s C	[3]	IRMM-	[0.0759(4)][c]
		7	0.922 75 - 0.927 86		0.924 11(24)		016*	[0.9241(4)]
							IAEA	
							NIST	
4	Be	9			1.0000	[4]		1.0000
5	B	10	0.189 29 - 0.203 86	m,r	0.1982(2) 2s C	[5]	IRMM-	0.199(7)
		11	0.796 14 - 0.810 71		0.8018(2)		011*	0.801(7)
							NIST	
6	C	12	0.988 53 - 0.990 37	r	0.988 922(28) P C	[6]	NBS19*	0.9893(8)
		13	0.009 63 - 0.011 47		0.011 078(28)		IAEA	0.0107(8)
							NIST	
7	N	14	0.995 79 - 0.996 54	r	0.996 337(4)[d] P C	[7]	Air*	0.996 36(20)
		15	0.003 46 - 0.004 21		0.003 663(4)[d]		IAEA	0.003 64(20)
							NIST	
8	O	16	0.997 38 - 0.997 76	r	0.997 6206(5)[e] 1s N	[8]	VSMOW*	0.997 57(16)
		17	0.000 37 - 0.000 40		0.000 3790(9)[e]	[9]	IAEA	0.000 38(1)
		18	0.001 88 - 0.002 22		0.002 0004(5)[e]		NIST	0.002 05(14)
9	F	19			1.0000	[10]		1.0000
10	Ne	20	0.8847 - 0.9051	g,m,r	0.904 838(90) 1s C	[11]	Air*	0.9048(3)
		21	0.0027 - 0.0171		0.002 696(5)			0.0027(1)
		22	0.0920 - 0.0996		0.092 465(90)			0.0925(3)
								(in air)
11	Na	23			1.0000	[12]		1.0000
12	Mg	24	0.789 58 - 0.790 17		0.789 92(25) 2s C	[13]	NIST-	0.7899(4)
		25	0.099 96 - 0.100 12		0.100 03(9)		SRM980*	0.1000(1)
		26	0.109 87 - 0.110 30		0.110 05(19)			0.1101(3)
13	Al	27			1.0000	[12]		1.0000

Z	E	M	Range of Natural Variations (mole fraction)	Annotation	Best Measurement from a Single Terrestrial Source (mole fraction)	Ref.	Available Reference Materials[a]	Representative Isotopic Composition (mole fraction)
1	2	3	4	5	6	7	8	9
14	Si	28	0.922 05 - 0.92241	r	0.922 2968(44) 2s C	[14]	IAEA	0.922 23(19)
		29	0.046 78 - 0.046 92		0.046 8316(32)		IRMM	0.046 85(8)
		30	0.030 82 - 0.031 02		0.030 8716(32)		NIST	0.030 92(11)
15	P	31			1.0000	[4]		1.0000
16	S	32	0.944 54 - 0.952 81	r	0.9504074(88) 2s C	[15]	IAEA-S1*	0.9499(26)
		33	0.007 30 - 0.007 93		0.0074869(60)		CEA	0.0075(2)
		34	0.039 76 - 0.047 34		0.0419599(66)		IAEA	0.0425(24)
		36	0.000 13 - 0.000 19		0.00014579(89)		NIST	0.0001(1)
17	Cl	35	0.756 44 - 0.759 23	m,g	0.757 71(45) 2s C	[16]	NIST-	0.7576(10)
		37	0.240 77 - 0.243 56		0.242 29(45)		SRM975*	0.2424(10)
18	Ar	36		g	0.003 365(6) P C	[17]	Air*	0.003 365(30)
		38			0.000 632(1)			0.000 632(5)
		40			0.996 003(6)			0.996 003(30) (in air)
19	K	39			0.932 5811(292) 2s C	[18]	NIST-	0.932 581(44)
		40			0.000 116 72(41)		SRM985*	0.000 117(1)
		41			0.067 3022(292)			0.067 302(44)
20	Ca	40	0.969 33 - 0.969 47	g,r	0.969 41(6) 2s N	[19]	NIST-	0.969 41(156)[h]
		42	0.006 46 - 0.006 48		0.006 47(3)		SRM915*	0.006 47(23)
		43	0.001 35 - 0.001 35		0.001 35(2)			0.001 35(10)
		44	0.020 82 - 0.020 92		0.020 86(4)			0.020 86(110)
		46	0.000 04 - 0.000 04		0.000 04(1)			0.000 04(3)
		48	0.001 86 - 0.001 88		0.001 87(1)			0.001 87(21)
21	Sc	45			1.0000	[20]		1.0000
22	Ti	46			0.082 49(21) 2s C	[21]		0.0825(3)
		47			0.074 37(14)			0.0744(2)
		48			0.737 20(22)			0.7372(3)
		49			0.054 09(10)			0.0541(2)
		50			0.051 85(13)			0.0518(2)
23	V	50	0.002 487 - 0.002 502	g	0.002 497(6) 1s F	[22]		0.002 50(4)
		51	0.997 498 - 0.997 513		0.997 503(6)			0.997 50(4)
24	Cr	50	0.042 94 - 0.043 45		0.043 452(85) 2s C	[23]	NIST-	0.043 45(13)
		52	0.837 62 - 0.837 90		0.837 895(117)		SRM979*	0.837 89(18)
		53	0.095 01 - 0.095 53		0.095 006(110)			0.095 01(17)
		54	0.023 65 - 0.023 91		0.023 647(48)			0.023 65(7)
25	Mn	55			1.0000	[4]		1.0000
26	Fe	54	0.058 37 - 0.058 61		0.058 45(23) 2s C	[24]	IRMM-	0.058 45(35)
		56	0.917 42 - 0.917 60		0.917 54(24)		014*	0.917 54(36)
		57	0.021 16 - 0.021 21		0.021 191(65)			0.021 19(10)
		58	0.002 81 - 0.002 82		0.002 819(27)			0.002 82(4)

Z	E	M	Range of Natural Variations (mole fraction)	Anno-tation	Best Measurement from a Single Terrestrial Source (mole fraction)	Ref.	Available Reference Materials[a]	Representative Isotopic Composition (mole fraction)
1	2	3	4	5	6	7	8	9
27	Co	59			1.0000	[4]		1.0000
28	Ni	58			0.680 769(59) 2s C	[25]	NIST-	0.680 769(89)
		60			0.262 231(51)		SRM986*	0.262 231(77)
		61			0.011 399(4)			0.011 399(6)
		62			0.036 345(11)			0.036 345(17)
		64			0.009 256(6)			0.009 256(9)
29	Cu	63	0.689 83 - 0.693 38	r	0.691 74(20) 2s C	[26]	NIST-	0.6915(15)
		65	0.306 62 - 0.310 17		0.308 26(20)		SRM976*	0.3085(15)
30	Zn	64			0.482 68(214) 2s C	[27]		0.482 68(321)
		66			0.279 75(51)			0.279 75(77)
		67			0.041 02(14)			0.041 02(21)
		68			0.190 24(82)			0.190 24(123)
		70			0.006 31(6)			0.006 31(9)
31	Ga	69		m	0.601 079(62) 2s C	[28]	NIST-	0.601 08(9)
		71			0.398 921(62)		SRM994*	0.398 92(9)
32	Ge	70			0.203 75(77) 2s C	[29]		0.2038(18)
		72			0.273 11(103)			0.2731(26)
		73			0.077 56(46)			0.0776(8)
		74			0.367 29(85)			0.3672(15)
		76			0.078 30(43)			0.0783(7)
33	As	75			1.0000	[4]		1.0000
34	Se	74		r	0.008 89(3) 1s N	[30]		0.0089(4)
		76			0.093 66(18)			0.0937(29)
		77			0.076 35(10)			0.0763(16)
		78			0.237 72(20)			0.2377(28)
		80			0.496 07(17)			0.4961(41)
		82			0.087 31(10)			0.0873(22)
35	Br	79			0.506 86(26) 2s C	[31]	NIST-	0.5069(7)
		81			0.493 14(26)		SRM977*	0.4931(7)
36	Kr	78		g,m	0.003 5518(32) 2s C	[32]		0.003 55(3)
		80			0.022 8560(96)			0.022 86(10)
		82			0.115 930(62)			0.115 93(31)
		83			0.114 996(58)			0.115 00(19)
		84			0.569 877(58)			0.569 87(15)
		86			0.172 790(32)			0.172 79(41) (in air)
37	Rb	85		g	0.721 654(132) 2s C	[33]	NIST-	0.7217(2)
		87			0.278 346(132)		SRM987*	0.2783(2)
38	Sr	84	0.0055 - 0.0058	g,r	0.005 574(16) 2s C	[34]	NIST-	0.0056(1)
		86	0.0975 - 0.0999		0.098 566(34)		SRM987*	0.0986(1)
		87	0.0694 - 0.0714		0.070 015(26)		NIST	0.0700(1)[h]

Z	E	M	Range of Natural Variations (mole fraction)	Anno-tation	Best Measurement from a Single Terrestrial Source (mole fraction)	Ref.	Available Reference Materials[a]	Representative Isotopic Composition (mole fraction)
1	2	3	4	5	6	7	8	9
		88	0.8229 - 0.8275		0.825 845(66)			0.8258(1)
39	Y	89			1.0000	[35]		1.0000
40	Zr	90		g	0.514 52(9) 2s N	[36]		0.5145(40)
		91			0.112 23(12)			0.1122(5)
		92			0.171 46(7)			0.1715(8)
		94			0.1738(12)			0.1738(28)
		96			0.027 99(5)			0.0280(9)
41	Nb	93			1.0000	[12]		1.0000
42	Mo	92		g	0.147 69(1) 2s L	[37]		0.1477(31)
		94			0.092 28(1)			0.0923(10)
		95			0.159 022(4)			0.1590(9)
		96			0.166 76(7)			0.1668(1)
		97			0.095 618(7)			0.0956(5)
		98			0.241 959(6)			0.2419(26)
		100			0.096 671(4)			0.0967(20)
43	Tc				---			---
44	Ru	96		g	0.055 420(1) 1s N	[38]		0.0554(14)
		98			0.018 688(2)			0.0187(3)
		99			0.127 579(6)			0.1276(14)
		100			0.125 985(4)			0.1260(7)
		101			0.170 600(10)			0.1706(2)
		102			0.315 519(11)			0.3155(14)
		104			0.186 210(11)			0.1862(27)
45	Rh	103			1.0000	[4]		1.0000
46	Pd	102		g	0.01020(8) 2s C	[39]		0.0102(1)
		104			0.1114(5)			0.1114(8)
		105			0.2233(5)			0.2233(8)
		106			0.2733(2)			0.2733(3)
		108			0.2646(6)			0.2646(9)
		110			0.1172(6)			0.1172(9)
47	Ag	107		g	0.518 392(51) 2s C	[40]	NIST-SRM978*	0.518 39(8)
		109			0.481 608(51)			0.481 61(8)
48	Cd	106		g	0.0125(2) 2s F	[41]		0.0125(6)
		108			0.0089(1)			0.0089(3)
		110			0.1249(6)			0.1249(18)
		111			0.1280(4)			0.1280(12)
		112			0.2413(7)			0.2413(21)
		113			0.1222(4)			0.1222(12)
		114			0.2873(14)			0.2873(42)
		116			0.0749(6)			0.0749(18)
49	In	113		g	0.042 88(5) 2s N	[42]		0.0429(5)
		115			0.957 12(5)			0.9571(5)

Z	E	M	Range of Natural Variations (mole fraction)	Anno-tation	Best Measurement from a Single Terrestrial Source (mole fraction)	Ref.	Available Reference Materials[a]	Representative Isotopic Composition (mole fraction)
1	2	3	4	5	6	7	8	9
50	Sn	112		g	0.009 73(3) 1s C	[43]		0.0097(1)
		114			0.006 59(3)[f]	[44]		0.0066(1)
		115			0.003 39(3)[f]			0.0034(1)
		116			0.145 36(31)			0.1454(9)
		117			0.076 76(22)			0.0768(7)
		118			0.242 23(30)			0.2422(9)
		119			0.085 85(13)			0.0859(4)
		120			0.325 93(20)			0.3258(9)
		122			0.046 29(9)			0.0463(3)
		124			0.057 89(17)			0.0579(5)
51	Sb	121		g	0.572 13(32) 2s C	[45]		0.5721(5)
		123			0.427 87(32)			0.4279(5)
52	Te	120		g	0.000 96(1)[i] 2se N	[46]		0.0009(1)
		122			0.026 03(1)[i]			0.0255(12)
		123			0.009 08(1)[i]			0.0089(3)
		124			0.048 16(2)[i]			0.0474(14)
		125			0.071 39(2)[i]			0.0707(15)
		126			0.189 52(4)[i]			0.1884(25)
		128			0.316 87(4)[i]			0.3174(8)
		130			0.337 99(3)[i]			0.3408(62)
53	I	127			1.0000	[47]		1.0000
54	Xe	124		g,m	0.000 952(3) 3s C	[48]		0.000 952(3)
		126			0.000 890(2)			0.000 890(2)
		128			0.019 102(8)			0.019 102(8)
		129			0.264 006(82)			0.264 006(82)
		130			0.040 710(13)			0.040 710(13)
		131			0.212 324(30)			0.212 324(30)
		132			0.269 086(33)			0.269 086(33)
		134			0.104 357(21)			0.104 357(21)
		136			0.088 573(44)			0.088 573(44) (in air)
55	Cs	133			1.0000	[12]		1.0000
56	Ba	130		g	0.001 058(2) 3se F	[49]		0.001 06(1)
		132			0.001 012(2)			0.001 01(1)
		134			0.024 17(3)			0.024 17(18)
		135			0.065 92(2)			0.065 92(12)
		136			0.078 53(4)			0.078 54(24)
		137			0.112 32(4)			0.112 32(24)
		138			0.716 99(7)			0.716 98(42)
57	La	138		g	0.000 9017(5) 2se N	[50]		0.000 90(1)
		139			0.999 0983(5)			0.999 10(1)
58	Ce	136	0.001 85 - 0.001 86	g	0.001 86(1) 2s C	[51]		0.001 85(2)
		138	0.002 51 - 0.002 54		0.002 51(1)			0.002 51(2)[h]
		140	0.884 46 - 0.884 49		0.884 49(34)			0.884 50(51)

Z	E	M	Range of Natural Variations (mole fraction)	Anno-tation	Best Measurement from a Single Terrestrial Source (mole fraction)	Ref.	Available Reference Materials[a]	Representative Isotopic Composition (mole fraction)
1	2	3	4	5	6	7	8	9
		142	0.111 14 - 0.111 14		0.111 14(34)			0.111 14(51)
59	Pr	141			1.0000	[35]		1.0000
60	Nd	142	0.2680 - 0.2730	g	0.2716(4) 2se N	[52]		0.272(5)
		143	0.1212 - 0.1232		0.1218(2)			0.122(2)[h]
		144	0.2379 - 0.2397		0.2383(4)			0.238(3)
		145	0.0823 - 0.0835		0.0830(2)			0.083(1)
		146	0.1706 - 0.1735		0.1717(3)			0.172(3)
		148	0.0566 - 0.0578		0.0574(1)			0.057(1)
		150	0.0553 - 0.0569		0.0562(1)			0.056(2)
61	Pm				---			---
62	Sm	144		g	0.030 734(9) 2s F	[53]		0.0307(7)
		147			0.149 934(18)			0.1499(18)
		148			0.112 406(15)			0.1124(10)
		149			0.138 189(18)			0.1382(7)
		150			0.073 796(14)			0.0738(1)
		152			0.267 421(66)			0.2675(16)
		154			0.227 520(68)			0.2275(29)
63	Eu	151		g	0.47810(42) 2se C	[54]		0.4781(6)
		153			0.52190(42)			0.5219(6)
64	Gd	152		g	0.002 029(4) 2se N	[55]		0.0020(1)
		154			0.021 809(4)			0.0218(3)
		155			0.147 998(17)			0.1480(12)
		156			0.204 664(6)			0.2047(9)
		157			0.156 518(9)			0.1565(2)
		158			0.248 347(16)			0.2484(7)
		160			0.218 635(7)			0.2186(19)
65	Tb	159			1.0000	[35]		1.0000
66	Dy	156		g	0.000 56(2) 2S C	[56]		0.000 56(3)
		158			0.000 95(2)			0.000 95(3)
		160			0.023 29(12)			0.023 29(18)
		161			0.188 89(28)			0.188 89(42)
		162			0.254 75(24)			0.254 75(36)
		163			0.248 96(28)			0.248 96(42)
		164			0.2826(36)			0.282 60(54)
67	Ho	165			1.0000	[35]		1.0000
68	Er	162		g	0.001 391(30) 2s C	[57]		0.001 39(5)
		164			0.016 006(20)			0.016 01(3)
		166			0.335 014(240)			0.335 03(36)
		167			0.228 724(60)			0.228 69(9)
		168			0.269 852(120)			0.269 78(18)
		170			0.149 013(240)			0.149 10(36)
69	Tm	169			1.0000	[35]		1.0000

Z	E	M	Range of Natural Variations (mole fraction)	Anno-tation	Best Measurement from a Single Terrestrial Source (mole fraction)	Ref.	Available Reference Materials[a]	Representative Isotopic Composition (mole fraction)
1	2	3	4	5	6	7	8	9
70	Yb	168		g	0.001 27(2) 2se N	[52]		0.0013(1)
		170			0.0304(2)			0.0304(15)
		171			0.1428(8)			0.1428(57)
		172			0.2183(10)			0.2183(67)
		173			0.1613(7)			0.1613(27)
		174			0.3183(14)			0.3183(92)
		176			0.1276(5)			0.1276(41)
71	Lu	175		g	0.974 16(5) 2se N	[58]		0.9741(2)
		176			0.025 84(5)			0.0259(2)
72	Hf	174	0.001 619 - 0.001 621		0.001 620(9) 2se N	[58]		0.0016(1)
		176	0.052 06 - 0.052 71		0.052 604(56)			0.0526(7)[h]
		177	0.185 93 - 0.186 06		0.185 953(12)			0.1860(9)
		178	0.272 78 - 0.272 97		0.272 811(22)			0.2728(7)
		179	0.136 19 - 0.1363		0.136 210(9)			0.1362(2)
		180	0.350 76 - 0.351		0.350 802(26)			0.3508(16)
73	Ta	180			0.000 123(3) 1se N	[12]		0.000 12(2)
		181			0.999 877(3)			0.999 88(2)
74	W	180			0.001 198(2) 1s N	[59]		0.0012(1)
		182			0.264 985(49)			0.2650(16)
		183			0.143 136(6)			0.1431(4)
		184			0.306 422(13)			0.3064(2)
		186			0.284 259(62)			0.2843(19)
75	Re	185			0.373 98(16) 2s C	[60]	NIST-SRM989*	0.3740(2)
		187			0.626 02(16)			0.6260(2)
76	Os	184		g,r	0.000 197(5) 1s N	[61]		0.0002(1)
		186			0.015 859(44)			0.0159(3)
		187			0.019 644(12)			0.0196(2)[h]
		188			0.132 434(19)			0.1324(8)
		189			0.161 466(16)			0.1615(5)
		190			0.262 584(14)			0.2626(2)
		192			0.407 815(22)			0.4078(19)
77	Ir	191			0.372 72(15) 1s N	[62]		0.373(2)
		193			0.627 28(15)			0.627(2)
78	Pt	190			0.000 136 34(68) 1s N	[63]		0.000 14(1)
		192			0.007 826 59(35)			0.007 82(7)
		194			0.329 6700(77)			0.329 67(99)
		195			0.338 315 57(42)			0.338 32(10)
		196			0.252 4166(36)			0.252 42(41)
		198			0.071 6349(42)			0.071 63(55)
79	Au	197			1.0000	[4]		1.0000
80	Hg	196			0.001 5344(19) 1s N	[64]		0.0015(1)
		198			0.099 68(13)			0.0997(20)

Z	E	M	Range of Natural Variations (mole fraction)	Anno-tation	Best Measurement from a Single Terrestrial Source (mole fraction)	Ref.	Available Reference Materials[a]	Representative Isotopic Composition (mole fraction)
1	2	3	4	5	6	7	8	9
		199			0.168 73(17)			0.1687(22)
		200			0.230 96(26)			0.2310(19)
		201			0.131 81(13)			0.1318(9)
		202			0.298 63(33)			0.2986(26)
		204			0.068 65(7)			0.0687(15)
81	Tl	203	0.294 94 - 0.295 28		0.295 24(9) 2s C	[65]	NIST-	0.2952(1)
		205	0.704 72 - 0.705 06		0.704 76(9)		SRM997*	0.7048(1)
82	Pb	204	0.0104 - 0.0165	g,r	0.014 245(12) 2s C	[66]	NIST-	0.014(1)
		206	0.2084 - 0.2748		0.241 447(57)		SRM981*	0.241(1)[h]
		207	0.1762 - 0.2365		0.220 827(27)		NIST	0.221(1)[h]
		208	0.5128 - 0.5621		0.523 481(86)			0.524(1)[h]
83	Bi	209			1.0000	[4]		1.0000
84	Po							
85	At							
86	Rn							
87	Fr							
88	Ra							
89	Ac							
90	Th	232		g	1.0000	[67]		1.0000
91	Pa	231			1.0000	[68]		1.0000
92	U	234	0.000 050 - 0.000 059	g,m,r	0.000 054 20(42) 2s C	[69]	IRMM-	[0.000 054(5)]
		235	0.007 198 - 0.007 207		0.007 200(1)		184*	[0.007 204(6)][c]
		238	0.992 739 - 0.992 752		0.992 745(10)		CEA	[0.992 742(10)]
							IRMM	
							NBL	

*Reference material used for the best measurement.

a NIST materials were previously labeled NBS. IRMM materials were previously labeled CBNM.

b Tank hydrogen has a ^{2}H abundance as low as 0.0032 atom percent.

c Materials depleted in ^{6}Li and ^{235}U are commercial sources of laboratory shelf reagents. In the case of Li such samples are known to have ^{6}Li abundances in the range 2.007 - 7.672 %, with natural materials at the higher end of this range. In the case of U, the ^{235}U abundance has been reported to range from 0.21 – 0.7207 atom percent, far removed from the natural value.

d The Commission recommends that the value of 272 be employed for ^{14}N/^{15}N of N_2 in air for the calculation of atom percent ^{15}N from measured δ^{15}N values.

e The best measurement reports a calibrated ^{16}O/^{18}O ratio on VSMOW.

f The original data for Sn has been adjusted to take into account possible errors due to ^{115}In contamination, and an error in the ^{114}Sn abundance.

h Evaluated isotopic composition is for most but not all commercial samples.

i An electron multiplier was used for these measurements and the measured abundances were adjusted using a "square root of the masses" correction factor.

The column contents are as follows:

Column l: The elements are tabulated in order of ascending atomic number (Z).

Column 2: The symbols for the elements (E) are listed using the abbreviations recommended by IUPAC.

Column 3: The mass number (M) for each isotope is listed.

Column 4: Range of natural variations. (from [**Error! Bookmark not defined.**,**Error! Bookmark not defined.**])

No data are given in this Column unless a range has been reliably established. The limits given do not include certain exceptional samples; these are noted with a "g" in Column 5.

Column 5: Annotations

g geologically exceptional specimens are known in which the element has an isotopic composition outside the reported range (refers to column 4).

m modified isotopic compositions may be found in commercially available material because it has been subjected to an undisclosed or inadvertent isotope fractionation. Substantial deviations from the isotopic compositions given can occur (refers to column 9).

r range in isotopic composition proven to exist in normal terrestrial material limits the precision of the isotope abundances (refers to column 9).

Column 6: The best measurement from a single terrestrial source.

The values are reproduced from the original literature. The uncertainties on the last digits are given in parenthesis as reported in the original publication. As they are not reported in any uniform manner in the literature, ls, 2s, 3s indicates l, 2, or 3 standard deviations, P indicates some other error as defined by the author, and ′se′ indicates standard error (standard deviation of the mean). Where data are published as isotope-abundance ratios, the ratios and their uncertainties are converted to mole fractions using orthodox procedures.

"C" is appended when calibrated mixtures have been used to correct the mass spectrometer for bias, giving an "absolute" result within the errors stated in the original publication.

"F" is appended when calibrated mixtures have been used to correct for isotope fractionation but the measurement fails to fulfill all of the requirements of a C measurement.

"L" is appended when the linearity of the mass spectrometer has been established for the relevant abundance ratios by using synthetic mixtures of isotopes or certified materials produced by an appropriate Standards laboratory.

"N" is appended when none of the above requirements are met.

The user is cautioned that:

a) Since the data are reproduced from the literature, the sum of the isotope abundances may not equal l exactly.

b) When a range of compositions has been established, the samples used for the best measurement may come from any part of the range.
c) An uncalibrated "Best Measurement" is not necessarily free of systematic errors.

Column 7: Reference for the best measurement given in Column 6.

Column 8: Reference materials with normal terrestrial isotopic compositions that are known to be available. An asterisk indicates the reference material used for the best measurement. When additional reference materials are available, the distributors are listed in lieu of specific reference materials (See Appendix).

Column 9: Representative Isotopic Composition.
In this column are listed the values that, in the opinion of CAWIA, represent the isotopic composition of chemicals and/or natural materials that may be encountered in the laboratory. For most elements, these values will yield approximately the standard atomic weight, but may not necessarily correspond to the most abundant natural material. The uncertainties listed in parentheses cover the range of probable isotope-abundance variations among different materials as well as experimental errors, which are derived by applying statistical guidelines used by CAWIA for assigning uncertainties to published isotope-abundance measurements.

NOTE. This table has been adapted from the Table of the Isotopic Compositions of the Elements, 1997 [**Error! Bookmark not defined.**] with additions from the compilation of Coplen *et al.* [**Error! Bookmark not defined.**,70] and unpublished data prepared by CAWIA at the General Assembly in 2001.

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