STANDARD ATOMIC WEIGHTS (2005)

This table of atomic weights includes the changes made in 2005 by the IUPAC Commission on Isotopic Abundances and Atomic Weights. Those changes affected the following elements: Al, Au, Bi, Co, Cs, La, Mn, Na, Nd, P, Pt, Sm, Sc, Ta, Tb, and Th.

The Standard Atomic Weights apply to the elements as they exist naturally on Earth, and the uncertainties take into account the isotopic variation found in most laboratory samples. Further comments on the variability are given in the footnotes.

The number in parentheses following the atomic weight value gives the uncertainty in the last digit. An atomic weight entry in brackets indicates that the element that has no stable isotopes; the value given is the atomic mass in u (or the mass number, if the mass is not accurately known) for the isotope of longest half-life. Thorium, protactinium, and uranium have no stable isotopes, but the terrestrial isotopic composition is sufficiently uniform to permit a standard atomic weight to be specified.

References

1. *Chemistry International*, Vol. 27, No. 6, p.18, 2005.
2. Coplen, T. D., *Pure Appl. Chem*. 73, 667, 2001.
3. Coplen, T. D., *J. Phys. Chem. Ref. Data*, 30, 701, 2001.

Name	Symbol	Atomic no.	Atomic weight	Footnotes
Actinium	Ac	89	[227.0277]	a
Aluminum	Al	13	26.9815386(8)	
Americium	Am	95	[243.0614]	a
Antimony	Sb	51	121.760(1)	g
Argon	Ar	18	39.948(1)	g r
Arsenic	As	33	74.92160(2)	
Astatine	At	85	[209.9871]	a
Barium	Ba	56	137.327(7)	
Berkelium	Bk	97	[247.0703]	a
Beryllium	Be	4	9.012182(3)	
Bismuth	Bi	83	208.98040(1)	
Bohrium	Bh	107	[264.12]	a
Boron	B	5	10.811(7)	g m r
Bromine	Br	35	79.904(1)	
Cadmium	Cd	48	112.411(8)	g
Calcium	Ca	20	40.078(4)	g
Californium	Cf	98	[251.0796]	a
Carbon	C	6	12.0107(8)	g r
Cerium	Ce	58	140.116(1)	g
Cesium	Cs	55	132.9054519(2)	
Chlorine	Cl	17	35.453(2)	g m r
Chromium	Cr	24	51.9961(6)	
Cobalt	Co	27	58.933195(5)	
Copper	Cu	29	63.546(3)	r
Curium	Cm	96	[247.0704]	a
Darmstadtium	Ds	110	[271]	a
Dubnium	Db	105	[262.1141]	a
Dysprosium	Dy	66	162.500(1)	g
Einsteinium	Es	99	[252.0830]	a
Erbium	Er	68	167.259(3)	g
Europium	Eu	63	151.964(1)	g
Fermium	Fm	100	[257.0951]	a
Fluorine	F	9	18.9984032(5)	
Francium	Fr	87	[223.0197]	a
Gadolinium	Gd	64	157.25(3)	g
Gallium	Ga	31	69.723(1)	
Germanium	Ge	32	72.64(1)	
Gold	Au	79	196.966569(4)	
Hafnium	Hf	72	178.49(2)	
Hassium	Hs	108	[277]	a
Helium	He	2	4.002602(2)	g r
Holmium	Ho	67	164.93032(2)	
Hydrogen	H	1	1.00794(7)	g m r
Indium	In	49	114.818(3)	
Iodine	I	53	126.90447(3)	
Iridium	Ir	77	192.217(3)	
Iron	Fe	26	55.845(2)	
Krypton	Kr	36	83.798(2)	g m
Lanthanum	La	57	138.90547(7)	g
Lawrencium	Lr	103	[262.1097]	a
Lead	Pb	82	207.2(1)	g r
Lithium	Li	3	6.941(2)	b g m r
Lutetium	Lu	71	174.967(1)	g
Magnesium	Mg	12	24.3050(6)	
Manganese	Mn	25	54.938045(5)	
Meitnerium	Mt	109	[268.1388]	a
Mendelevium	Md	101	[258.0984]	a
Mercury	Hg	80	200.59(2)	
Molybdenum	Mo	42	95.94(2)	g
Neodymium	Nd	60	144.242(3)	g
Neon	Ne	10	20.1797(6)	g m
Neptunium	Np	93	[237.0482]	a
Nickel	Ni	28	58.6934(2)	
Niobium	Nb	41	92.90638(2)	
Nitrogen	N	7	14.0067(2)	g r
Nobelium	No	102	[259.1010]	a
Osmium	Os	76	190.23(3)	g
Oxygen	O	8	15.9994(3)	g r
Palladium	Pd	46	106.42(1)	g
Phosphorus	P	15	30.973762(2)	
Platinum	Pt	78	195.084(9)	
Plutonium	Pu	94	[244.0642]	a
Polonium	Po	84	[208.9824]	a
Potassium	K	19	39.0983(1)	g
Praseodymium	Pr	59	140.90765(2)	
Promethium	Pm	61	[144.9127]	a
Protactinium	Pa	91	231.03588(2)	
Radium	Ra	88	[226.0254]	a
Radon	Rn	86	[222.0176]	a
Rhenium	Re	75	186.207(1)	
Rhodium	Rh	45	102.90550(2)	
Roentgenium	Rg	111	[272.1535]	a
Rubidium	Rb	37	85.4678(3)	g
Ruthenium	Ru	44	101.07(2)	g
Rutherfordium	Rf	104	[261.1088]	a
Samarium	Sm	62	150.36(2)	g
Scandium	Sc	21	44.955912(6)	
Seaborgium	Sg	106	[266.1219]	a

Name	Symbol	Atomic no.	Atomic weight	Footnotes
Selenium	Se	34	78.96(3)	r
Silicon	Si	14	28.0855(3)	r
Silver	Ag	47	107.8682(2)	g
Sodium	Na	11	22.98976928(2)	
Strontium	Sr	38	87.62(1)	g r
Sulfur	S	16	32.065(5)	g r
Tantalum	Ta	73	180.94788(2)	
Technetium	Tc	43	[97.9072]	a
Tellurium	Te	52	127.60(3)	g
Terbium	Tb	65	158.92535(2)	
Thallium	Tl	81	204.3833(2)	
Thorium	Th	90	232.03806(2)	g
Thulium	Tm	69	168.93421(2)	
Tin	Sn	50	118.710(7)	g
Titanium	Ti	22	47.867(1)	
Tungsten	W	74	183.84(1)	
Ununbium	Uub	112	[285]	a
Ununhexium	Uuh	116	[289]	a
Ununquadium	Uuq	114	[289]	a
Uranium	U	92	238.02891(3)	g m
Vanadium	V	23	50.9415(1)	
Xenon	Xe	54	131.293(6)	g m
Ytterbium	Yb	70	173.04(3)	g
Yttrium	Y	39	88.90585(2)	
Zinc	Zn	30	65.409(4)	
Zirconium	Zr	40	91.224(2)	g

[a] No stable isotope exists. The atomic mass in u (or the mass number, if the mass is not accurately known) is given in brackets for the isotope of longest half-life.
[b] Commercially available Li materials have atomic weights that range between 6.939 and 6.996; if a more accurate value is required, it must be determined for the specific material.
[g] Geological specimens are known in which the element has an isotopic composition outside the limits for the normal material. The difference between the atomic weight of the element in such specimens and that given in the table may exceed the stated uncertainty.
[m] Modified isotopic compositions may be found in commercially available material because it has been subject to an undisclosed or inadvertent isotopic fractionation. Substantial deviations in atomic weight of the element from that given in the table can occur.
[r] Range in isotopic composition of normal terrestrial material prevents a more precise atomic weight being given; the tabulated value should be applicable to any normal material.