

Atomic Weights of the Elements 2001

Scaled to the relative atomic mass, $A_r(^{12}\text{C}) = 12$, where ^{12}C is a neutral atom in its nuclear and electronic ground state.

The atomic weights of many elements are not invariant but depend on the origin and treatment of the material. The standard values of $A_r(\text{E})$ and the uncertainties (in parentheses following the last significant figure to which they are attributed) apply to elements of natural terrestrial origin. The footnotes to this table elaborate the types of variation that may occur for individual elements and that may be larger than the listed uncertainties of values of $A_r(\text{E})$. Names of elements with atomic numbers 110 to 116 are provisional.

Name	Symbol	Number	Atomic Weight	Notes	Name	Symbol	Number	Atomic Weight	Notes
Actinium	Ac	89	*		Germanium	Ge	32	72.64(1)	
Aluminum	Al	13	26.981538(2)		Gold	Au	79	196.96655(2)	
Americium	Am	95	*		Hafnium	Hf	72	178.49(2)	
Antimony	Sb	51	121.760(1)	<i>g</i>	Hassium	Hs	108	*	
Argon	Ar	18	39.948(1)	<i>g,r</i>	Helium	He	2	4.002602(2)	<i>g,m</i>
Arsenic	As	33	74.92160(2)		Holmium	Ho	67	164.93032(2)	
Astatine	At	85	*		Hydrogen	H	1	1.00794(7)	<i>g,m,r</i>
Barium	Ba	56	137.327(7)		Indium	In	49	114.818(3)	
Berkelium	Bk	97	*		Iodine	I	53	126.90447(3)	
Beryllium	Be	4	9.012182(3)		Iridium	Ir	77	192.217(3)	
Bismuth	Bi	83	208.98038(2)		Iron	Fe	26	55.845(2)	
Bohrium	Bh	107	*		Krypton	Kr	36	83.798(2)	<i>g,m</i>
Boron	B	5	10.811(7)	<i>g,m,r</i>	Lanthanum	La	57	138.9055(2)	<i>g</i>
Bromine	Br	35	79.904(1)		Lawrencium	Lr	103	*	
Cadmium	Cd	48	112.411(8)	<i>g</i>	Lead	Pb	82	207.2(1)	<i>g,r</i>
Calcium	Ca	20	40.078(4)	<i>g</i>	Lithium	Li	3	6.941(2)†	<i>g,m,r</i>
Californium	Cf	98	*		Lutetium	Lu	71	174.967(1)	<i>g</i>
Carbon	C	6	12.0107(8)	<i>g,r</i>	Magnesium	Mg	12	24.3050(6)	
Cerium	Ce	58	140.116(1)	<i>g</i>	Manganese	Mn	25	54.938049(9)	
Cesium	Cs	55	132.90545(2)		Meitnerium	Mt	109	*	
Chlorine	Cl	17	35.453(2)	<i>g,m,r</i>	Mendelevium	Md	101	*	
Chromium	Cr	24	51.9961(6)		Mercury	Hg	80	200.59(2)	
Cobalt	Co	27	58.933200(9)		Molybdenum	Mo	42	95.94(2)	<i>g</i>
Copper	Cu	29	63.546(3)	<i>r</i>	Neodymium	Nd	60	144.24(3)	<i>g</i>
Curium	Cm	96	*		Neon	Ne	10	20.1797(6)	<i>g,m</i>
Dubnium	Db	105	*		Neptunium	Np	93	*	
Dysprosium	Dy	66	162.500(1)	<i>g</i>	Nickel	Ni	28	58.6934(2)	
Einsteinium	Es	99	*		Niobium	Nb	41	92.90638(2)	
Erbium	Er	68	167.259(3)	<i>g</i>	Nitrogen	N	7	14.0067(2)	<i>g,r</i>
Europium	Eu	63	151.964(1)	<i>g</i>	Nobelium	No	102	*	
Fermium	Fm	100	*		Osmium	Os	76	190.23(3)	<i>g</i>
Fluorine	F	9	18.9984032(5)		Oxygen	O	8	15.9994(3)	<i>g,r</i>
Francium	Fr	87	*		Palladium	Pd	46	106.42(1)	<i>g</i>
Gadolinium	Gd	64	157.25(3)	<i>g</i>	Phosphorus	P	15	30.973761(2)	
Gallium	Ga	31	69.723(1)		Platinum	Pt	78	195.078(2)	

Name	Symbol	Number	Atomic Weight	Notes	Name	Symbol	Number	Atomic Weight	Notes
Plutonium	Pu	94	*		Tantalum	Ta	73	180.9479(1)	
Polonium	Po	84	*		Technetium	Tc	43	*	
Potassium	K	19	39.0983(1)		Tellurium	Te	52	127.60(3)	<i>g</i>
Praseodymium	Pr	59	140.90765(2)		Terbium	Tb	65	158.92534(2)	
Promethium	Pm	61	*		Thallium	Tl	81	204.3833(2)	
Protactinium	Pa	91	231.03588(2)*		Thorium	Th	90	232.0381(1)*	<i>g</i>
Radium	Ra	88	*		Thulium	Tm	69	168.93421(2)	
Radon	Rn	86	*		Tin	Sn	50	118.710(7)	<i>g</i>
Rhenium	Re	75	186.207(1)		Titanium	Ti	22	47.867(1)	
Rhodium	Rh	45	102.90550(2)		Tungsten	W	74	183.84(1)	
Rubidium	Rb	37	85.4678(3)	<i>g</i>	Ununbium	Uub	112	*	
Ruthenium	Ru	44	101.07(2)	<i>g</i>	Ununhexium	Uuh	116	*	
Rutherfordium	Rf	104	*		Ununnilium	Uun	110	*	
Samarium	Sm	62	150.36(3)	<i>g</i>	Ununquadium	Uuq	114	*	
Scandium	Sc	21	44.955910(8)		Unununium	Uuu	111	*	
Seaborgium	Sg	106	*		Uranium	U	92	238.02891(3)*	<i>g,m</i>
Selenium	Se	34	78.96(3)	<i>r</i>	Vanadium	V	23	50.9415(1)	
Silicon	Si	14	28.0855(3)	<i>r</i>	Xenon	Xe	54	131.293(6)	<i>g,m</i>
Silver	Ag	47	107.8682(2)	<i>g</i>	Ytterbium	Yb	70	173.04(3)	<i>g</i>
Sodium	Na	11	22.989770(2)		Yttrium	Y	39	88.90585(2)	
Strontium	Sr	38	87.62(1)	<i>g,r</i>	Zinc	Zn	30	65.409(4)	
Sulfur	S	16	32.065(5)	<i>g,r</i>	Zirconium	Zr	40	91.224(2)	<i>g</i>

* Element has no stable nuclides. However, three such elements (Pa, Th, and U) do have a characteristic terrestrial isotopic composition, and for these an atomic weight is tabulated.

† 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 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 subjected 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 $A_r(E)$ being given; the tabulated $A_r(E)$ value should be applicable to any normal material.

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