

| Key | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|---|---------------------------------------|--|--|--|--------------------------------------|---|--|--------------------------------------|---|---|---------------------------------------|---|--|---|---|--|---|---|--|---|
| <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Group: 1</p> <p>Atomic number: 1</p> <p>Symbol: H</p> <p>Name: hydrogen</p> <p>Conventional atomic weight: 1.008</p> <p>Standard atomic weight: [1.0078, 1.0082]</p> </div> <div style="width: 45%;"> <p>Metals:</p> <ul style="list-style-type: none"> Alkali metal Alkaline earth metal Lanthanide Actinide Transition metal Post-transition metal <p>Metalloids:</p> <ul style="list-style-type: none"> Metalloid <p>Nonmetals:</p> <ul style="list-style-type: none"> Reactive nonmetal Noble gas <p>Unknown:</p> <ul style="list-style-type: none"> Unknown chemical properties </div> </div> | | | | | | | | | | | | | | | | | | | | | | | |
| 1 H hydrogen 1.008 [1.0078, 1.0082] | | | | | | | | | | | | | | | | | 2 He helium 4.0026 | | | | | | |
| 3 Li lithium 6.94 [6.938, 6.997] | 4 Be beryllium 9.0122 | | | | | | | | | | | | | | | | | 5 B boron 10.81 [10.806, 10.821] | 6 C carbon 12.011 [12.009, 12.012] | 7 N nitrogen 14.007 [14.006, 14.008] | 8 O oxygen 15.999 [15.999, 16.000] | 9 F fluorine 18.998 | 10 Ne neon 20.180 |
| 11 Na sodium 22.990 | 12 Mg magnesium 24.305 [24.304, 24.307] | | | | | | | | | | | | | | | | | 13 Al aluminium 26.982 | 14 Si silicon 28.085 [28.084, 28.086] | 15 P phosphorus 30.974 | 16 S sulfur 32.06 [32.059, 32.076] | 17 Cl chlorine 35.45 [24.304, 24.307] | 18 Ar argon 39.95 [39.792, 39.963] |
| 19 K potassium 39.098 | 20 Ca calcium 40.078(4) | 21 Sc scandium 44.956 | 22 Ti titanium 47.867 | 23 V vanadium 50.942 | 24 Cr chromium 51.996 | 25 Mn manganese 54.938 | 26 Fe iron 55.845(2) | 27 Co cobalt 58.933 | 28 Ni nickel 58.693 | 29 Cu copper 63.546(3) | 30 Zn zinc 65.38(2) | 31 Ga gallium 69.723 | 32 Ge germanium 72.630(8) | 33 As arsenic 74.922 | 34 Se selenium 78.971(8) | 35 Br bromine 79.904 [79.901, 79.907] | 36 Kr krypton 83.798(2) | | | | | | |
| 37 Rb rubidium 85.468 | 38 Sr strontium 87.62 | 39 Y yttrium 88.906 | 40 Zr zirconium 91.224(2) | 41 Nb niobium 92.906 | 42 Mo molybdenum 95.95 | 43 Tc technetium | 44 Ru ruthenium 101.07(2) | 45 Rh rhodium 102.91 | 46 Pd palladium 106.42 | 47 Ag silver 107.87 | 48 Cd cadmium 112.41 | 49 In indium 114.82 | 50 Sn tin 118.71 | 51 Sb antimony 121.76 | 52 Te tellurium 127.60(3) | 53 I iodine 126.90 | 54 Xe xenon 131.29 | | | | | | |
| 55 Cs caesium 132.91 | 56 Ba barium 137.33 | 57-71 lanthanoids | 72 Hf hafnium 178.49(2) | 73 Ta tantalum 180.95 | 74 W tungsten 183.84 | 75 Re rhenium 186.21 | 76 Os osmium 190.23(3) | 77 Ir iridium 192.22 | 78 Pt platinum 195.08 | 79 Au gold 196.97 | 80 Hg mercury 200.59 | 81 Tl thallium 204.38 [204.38, 204.39] | 82 Pb lead 207.2 | 83 Bi bismuth 208.98 | 84 Po polonium | 85 At astatine | 86 Rn radon | | | | | | |
| 87 Fr francium | 88 Ra radium | 89-103 actinoids | 104 Rf rutherfordium | 105 Db dubnium | 106 Sg seaborgium | 107 Bh bohrium | 108 Hs hassium | 109 Mt meitnerium | 110 Ds darmstadtium | 111 Rg roentgenium | 112 Cn copernicium | 113 Nh nihonium | 114 Fl flerovium | 115 Mc moscovium | 116 Lv livermorium | 117 Ts tennessine | 118 Og oganeson | | | | | | |
| 57 La lanthanum 138.91 | 58 Ce cerium 140.12 | 59 Pr praseodymium 140.91 | 60 Nd neodymium 144.24 | 61 Pm promethium | 62 Sm samarium 150.36(2) | 63 Eu europium 151.96 | 64 Gd gadolinium 157.25(3) | 65 Tb terbium 158.93 | 66 Dy dysprosium 162.50 | 67 Ho holmium 164.93 | 68 Er erbium 167.26 | 69 Tm thulium 168.93 | 70 Yb ytterbium 173.05 | 71 Lu lutetium 174.97 | | | | | | | | | |
| 89 Ac actinium | 90 Th thorium 232.04 | 91 Pa protactinium 231.04 | 92 U uranium 238.03 | 93 Np neptunium | 94 Pu plutonium | 95 Am americium | 96 Cm curium | 97 Bk berkelium | 98 Cf californium | 99 Es einsteinium | 100 Fm fermium | 101 Md mendelevium | 102 No nobelium | 103 Lr lawrencium | | | | | | | | | |

*An interval in square brackets provides the lower and upper bounds of the standard atomic weight for that element. For users needing an atomic-weight value for an unspecified sample with disregard to the uncertainty, the conventional values are provided. No values are listed for elements which lack isotopes with a characteristic isotopic abundance in natural terrestrial samples.

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Elements in alphabetical order

| Element name | Symbol | Atomic number |
|--------------|--------|---------------|
| Actinium | Ac | 89 |
| Aluminium | Al | 13 |
| Americium | Am | 95 |
| Antimony | Sb | 51 |
| Argon | Ar | 18 |
| Arsenic | As | 33 |
| Astatine | At | 85 |
| Barium | Ba | 56 |
| Berkelium | Bk | 97 |
| Beryllium | Be | 4 |
| Bismuth | Bi | 83 |
| Bohrium | Bh | 107 |
| Boron | B | 5 |
| Bromine | Br | 35 |
| Cadmium | Cd | 48 |
| Calcium | Ca | 20 |
| Californium | Cf | 98 |
| Carbon | C | 6 |
| Cerium | Ce | 58 |
| Caesium | Cs | 55 |
| Chlorine | Cl | 17 |
| Chromium | Cr | 24 |
| Cobalt | Co | 27 |
| Copernicium | Cn | 112 |
| Copper | Cu | 29 |
| Curium | Cm | 96 |
| Darmstadtium | Ds | 110 |
| Dubnium | Db | 105 |
| Dysprosium | Dy | 66 |
| Einsteinium | Es | 99 |
| Erbium | Er | 68 |
| Europium | Eu | 63 |
| Fermium | Fm | 100 |
| Flerovium | Fl | 114 |
| Fluorine | F | 9 |
| Francium | Fr | 87 |
| Gadolinium | Gd | 64 |
| Gallium | Ga | 31 |
| Germanium | Ge | 32 |
| Gold | Au | 79 |

| Element name | Symbol | Atomic number |
|--------------|--------|---------------|
| Hafnium | Hf | 72 |
| Hassium | Hs | 108 |
| Helium | He | 2 |
| Holmium | Ho | 67 |
| Hydrogen | H | 1 |
| Indium | In | 49 |
| Iodine | I | 53 |
| Iridium | Ir | 77 |
| Iron | Fe | 26 |
| Krypton | Kr | 36 |
| Lanthanum | La | 57 |
| Lawrencium | Lr | 103 |
| Lead | Pb | 82 |
| Lithium | Li | 3 |
| Livermorium | Lv | 116 |
| Lutetium | Lu | 71 |
| Magnesium | Mg | 12 |
| Manganese | Mn | 25 |
| Meitnerium | Mt | 109 |
| Mendelevium | Md | 101 |
| Mercury | Hg | 80 |
| Molybdenum | Mo | 42 |
| Moscovium | Mc | 115 |
| Neodymium | Nd | 60 |
| Neon | Ne | 10 |
| Neptunium | Np | 93 |
| Nickel | Ni | 28 |
| Niobium | Nb | 41 |
| Nihonium | Nh | 113 |
| Nitrogen | N | 7 |
| Nobelium | No | 102 |
| Oganesson | Og | 118 |
| Osmium | Os | 76 |
| Oxygen | O | 8 |
| Palladium | Pd | 46 |
| Phosphorus | P | 15 |
| Platinum | Pt | 78 |
| Plutonium | Pu | 94 |
| Polonium | Po | 84 |
| Potassium | K | 19 |

| Element name | Symbol | Atomic number |
|---------------|--------|---------------|
| Praseodymium | Pr | 59 |
| Promethium | Pm | 61 |
| Protactinium | Pa | 91 |
| Radium | Ra | 88 |
| Radon | Rn | 86 |
| Rhenium | Re | 75 |
| Rhodium | Rh | 45 |
| Roentgenium | Rg | 111 |
| Rubidium | Rb | 37 |
| Ruthenium | Ru | 44 |
| Rutherfordium | Rf | 104 |
| Samarium | Sm | 62 |
| Scandium | Sc | 21 |
| Seaborgium | Sg | 106 |
| Selenium | Se | 34 |
| Silicon | Si | 14 |
| Silver | Ag | 47 |
| Sodium | Na | 11 |
| Strontium | Sr | 38 |
| Sulfur | S | 16 |
| Tantalum | Ta | 73 |
| Technetium | Tc | 43 |
| Tellurium | Te | 52 |
| Tennessine | Ts | 117 |
| Terbium | Tb | 65 |
| Thallium | Tl | 81 |
| Thorium | Th | 90 |
| Thulium | Tm | 69 |
| Tin | Sn | 50 |
| Titanium | Ti | 22 |
| Tungsten | W | 74 |
| Uranium | U | 92 |
| Vanadium | V | 23 |
| Xenon | Xe | 54 |
| Ytterbium | Yb | 70 |
| Yttrium | Y | 39 |
| Zinc | Zn | 30 |
| Zirconium | Zr | 40 |

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Frequently used fundamental physical constants

| Quantity | Symbol | Value | Unit | Relative std. uncert. u_r |
|---|---------------|--|---|-----------------------------|
| speed of light in vacuum | c | 299 792 458 | m s^{-1} | exact |
| Newtonian constant of gravitation | G | $6.674\,30(15) \times 10^{-11}$ | $\text{m}^3 \text{kg}^{-1} \text{s}^{-2}$ | 2.2×10^{-5} |
| Planck constant* | h | $6.626\,070\,15 \times 10^{-34}$ | J Hz^{-1} | exact |
| | \hbar | $1.054\,571\,817 \dots \times 10^{-34}$ | J s | exact |
| elementary charge | e | $1.602\,176\,634 \times 10^{-19}$ | C | exact |
| vacuum magnetic permeability $4\pi\alpha\hbar/e^2c$ | μ_0 | $1.256\,637\,062\,12(19) \times 10^{-6}$ | N A^{-2} | 1.5×10^{-10} |
| vacuum electric permittivity $1/\mu_0c^2$ | ϵ_0 | $8.854\,187\,8128(13) \times 10^{-12}$ | F m^{-1} | 1.5×10^{-10} |
| Josephson constant $2e/h$ | K_J | $483\,597.848\,4 \dots \times 10^9$ | Hz V^{-1} | exact |
| von Klitzing constant $\mu_0c/2\alpha = 2\pi\hbar/e^2$ | R_K | 25 812.807 45 ... | Ω | exact |
| magnetic flux quantum $2\pi\hbar/(2e)$ | Φ_0 | $2.067\,833\,848 \dots \times 10^{-15}$ | Wb | exact |
| conductance quantum $2e^2/2\pi\hbar$ | G_0 | $7.748\,091\,729 \dots \times 10^{-5}$ | S | exact |
| electron mass | m_e | $9.109\,383\,7015(28) \times 10^{-31}$ | kg | 3.0×10^{-10} |
| proton mass | m_p | $1.672\,621\,923\,69(51) \times 10^{-27}$ | kg | 3.1×10^{-10} |
| proton-electron mass ratio | m_p/m_e | 1836.152 673 43(11) | | 6.0×10^{-11} |
| fine-structure constant $e^2/4\pi\epsilon_0\hbar c$ | α | $7.297\,352\,5693(11) \times 10^{-3}$ | | 1.5×10^{-10} |
| inverse fine-structure constant | α^{-1} | 137.035 999 084(21) | | 1.5×10^{-10} |
| Rydberg frequency $\alpha^2 m_e c^2 / 2h$ | cR_∞ | $3.289\,841\,960\,2508(64) \times 10^{15}$ | Hz | 1.9×10^{-12} |
| Boltzmann constant | k | $1.380\,649 \times 10^{-23}$ | J K^{-1} | exact |
| Avogadro constant | N_A | $6.022\,140\,76 \times 10^{23}$ | mol^{-1} | exact |
| molar gas constant $N_A k$ | R | 8.314 462 618 ... | $\text{J mol}^{-1} \text{K}^{-1}$ | exact |
| Faraday constant $N_A e$ | F | 96 485.332 12 ... | C mol^{-1} | exact |
| Stefan-Boltzmann constant | | | | |
| $(\pi^2/60)k^4/h^3c^2$ | σ | $5.670\,374\,419 \dots \times 10^{-8}$ | $\text{W m}^{-2} \text{K}^{-4}$ | exact |
| Non-SI units accepted for use with the SI | | | | |
| electron volt (e/C) J | eV | $1.602\,176\,634 \times 10^{-19}$ | J | exact |
| (unified) atomic mass unit $\frac{1}{12}m(^{12}\text{C})$ | u | $1.660\,539\,066\,60(50) \times 10^{-27}$ | kg | 3.0×10^{-10} |

* The energy of a photon with frequency ν expressed in unit Hz is $E = h\nu$ in J. Unitary time evolution of the state of this photon is given by $\exp(-iEt/\hbar)|\varphi\rangle$, where $|\varphi\rangle$ is the photon state at time $t = 0$ and time is expressed in unit s. The ratio Et/\hbar is a phase.

These are the 2018 CODATA recommended values of the fundamental physical constants, released 20 May 2019. For more information, see physics.nist.gov/constants.

Source: *Elte Tiesinga, Peter J. Mohr, David B. Newell, and Barry N. Taylor (2019), "The 2018 CODATA Recommended Values of the Fundamental Physical Constants" (Web Version 8.0). Database developed by J. Baker, M. Douma, and S. Kotochigova. Available at <http://physics.nist.gov/constants>, National Institute of Standards and Technology, Gaithersburg, MD 20899.*