ZACK'S ROCKS & MINERALS

(http://www.zacksrocksandminerals.com/)

# Periodic Table of the Elements

| Alkali metals | Alkaline earth metals | Lanthanides | Actinides | Transition metals |
|---|---|---|---|---|
| Poor metals | Metalloids | Nonmetals | Halogens | Noble gases |

| | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | Group 6 | Group 7 | Group 8 | Group 9 | Group 10 | Group 11 | Group 12 | Group 13 | Group 14 | Group 15 | Group 16 | Group 17 | Group 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 H | | | | | | | | | | | | | | | | | 2 He |
| 2 | 3 Li | 4 Be | | | | | | | | | | | 5 B | 6 C | 7 N | 8 O | 9 Fe | 10 Ne |
| 3 | 11 Na | 12 Mg | | | | | | | | | | | 13 Al | 14 Si | 15 P | 16 S | 17 Cl | 18 Ar |
| 4 | 19 K | 20 Ca | 21 Sc | 22 Ti | 23 V | 24 Cr | 25 Mn | 26 Fe | 27 Co | 28 Ni | 29 Cu | 30 Zn | 31 Ga | 32 Ge | 33 As | 34 Se | 35 Br | 36 Kr |
| 5 | 37 Rb | 38 Sr | 39 Y | 40 Zr | 41 Nb | 42 Mo | 43 Tc | 44 Ru | 45 Rh | 46 Pd | 47 Ag | 48 Cd | 49 In | 50 Se | 51 Sb | 52 Te | 53 I | 54 Xe |
| 6 | 55 Cs | 56 Ba | * | 72 Hf | 73 Ta | 74 W | 75 Re | 76 Os | 77 Ir | 78 Pt | 79 Au | 80 Hg | 81 Ti | 82 Pb | 83 Bi | 84 Po | 85 At | 86 Rn |
| 7 | 87 Fr | 88 Ra | ** | 104 Rf | 105 Db | 106 Sg | 107 Bh | 108 Hs | 109 Mt | 110 Ds | 111 Rg | 112 Uub | 113 Uut | 114 Uuq | 115 Uup | 116 Uuh | 117 Uus | 118 Uuo |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * Lanthanides | 57 La | 58 Ce | 59 Pr | 60 Nd | 61 Pm | 62 Sm | 63 Eu | 64 Gd | 65 Tb | 66 Dy | 67 Ho | 68 Er | 69 Tm | 70 Yb | 71 Lu |
| ** Actinides | 89 Ac | 90 Th | 91 Pa | 92 U | 93 Np | 94 Pu | 95 Am | 96 Cm | 97 Bk | 98 Cf | 99 Es | 100 Fm | 101 Md | 102 No | 103 Lr |

| Atomic Number | Symbol | Name | Average Atomic Mass |
|---|---|---|---|
| 1 | H | Hydrogen | 1.00794(7) |
| 2 | He | Helium | 4.002602(2) |
| 3 | Li | Lithium | 6.941(2) |
| 4 | Be | Beryllium | 9.012182(3) |
| 5 | B | Boron | 10.811(7) |
| 6 | C | Carbon | 12.0107(8) |
| 7 | N | Nitrogen | 14.00674(7) |
| 8 | O | Oxygen | 15.9994(3) |
| 9 | F | Fluorine | 18.9984032(5) |
| 10 | Ne | Neon | 20.1797(6) |
| 11 | Na | Sodium | 22.98976928(2) |
| 12 | Mg | Magnesium | 24.3050(6) |

| Atomic Number | Symbol | Name | Average Atomic Mass |
|---|---|---|---|
| 13 | Al | Aluminium | 26.9815386(8) |
| 14 | Si | Silicon | 28.0855(3) |
| 15 | P | Phosphorus | 30.973762(2) |
| 16 | S | Sulfur | 32.066(6) |
| 17 | Cl | Chlorine | 35.4527(9) |
| 18 | Ar | Argon | 39.948(1) |
| 19 | K | Potassium | 39.0983(1) |
| 20 | Ca | Calcium | 40.078(4) |
| 21 | Sc | Scandium | 44.955912(6) |
| 22 | Ti | Titanium | 47.867(1) |
| 23 | V | Vanadium | 50.9415(1) |
| 24 | Cr | Chromium | 51.9961(6) |
| 25 | Mn | Manganese | 54.938045(5) |
| 26 | Fe | Iron | 55.845(2) |
| 27 | Co | Cobalt | 58.933195(5) |
| 28 | Ni | Nickel | 58.6934(2) |
| 29 | Cu | Copper | 63.546(3) |
| 30 | Zn | Zinc | 65.39(2) |
| 31 | Ga | Gallium | 69.723(1) |
| 32 | Ge | Germanium | 72.61(2) |
| 33 | As | Arsenic | 74.92160(2) |
| 34 | Se | Selenium | 78.96(3) |
| 35 | Br | Bromine | 79.904(1) |
| 36 | Kr | Krypton | 83.80(1) |
| 37 | Rb | Rubidium | 85.4678(3) |
| 38 | Sr | Strontium | 87.62(1) |
| 39 | Y | Yttrium | 88.90585(2) |
| 40 | Zr | Zirconium | 91.224(2) |
| 41 | Nb | Niobium | 92.90638(2) |
| 42 | Mo | Molybdenum | 95.94(1) |
| 43 | Tc | Technetium | [97.9072] |
| 44 | Ru | Ruthenium | 101.07(2) |
| 45 | Rh | Rhodium | 102.90550(2) |
| 46 | Pd | Palladium | 106.42(1) |
| 47 | Ag | Silver | 107.8682(2) |
| 48 | Cd | Cadmium | 112.411(8) |
| 49 | In | Indium | 114.818(3) |
| 50 | Sn | Tin | 118.710(7) |

| Atomic Number | Symbol | Name | Average Atomic Mass |
|---|---|---|---|
| 51 | Sb | Antimony | 121.760(1) |
| 52 | Te | Tellurium | 127.60(3) |
| 53 | I | Iodine | 126.90447(3) |
| 54 | Xe | Xenon | 131.29(2) |
| 55 | Cs | Caesium | 132.9054519(2) |
| 56 | Ba | Barium | 137.327(7) |
| 57 | La | Lanthanum | 138.90547(7) |
| 58 | Ce | Cerium | 140.116(1) |
| 59 | Pr | Praseodymium | 140.90765(2) |
| 60 | Nd | Neodymium | 144.242(3) |
| 61 | Pm | Promethium | [144.9127] |
| 62 | Sm | Samarium | 150.36(2) |
| 63 | Eu | Europium | 151.964(1) |
| 64 | Gd | Gadolinium | 157.25(3) |
| 65 | Tb | Terbium | 158.92535(2) |
| 66 | Dy | Dysprosium | 162.500(1) |
| 67 | Ho | Holmium | 164.93032(2) |
| 68 | Er | Erbium | 167.259(3) |
| 69 | Tm | Thulium | 168.93421(2) |
| 70 | Yb | Ytterbium | 173.04(3) |
| 71 | Lu | Lutetium | 174.967(1) |
| 72 | Hf | Hafnium | 178.49(2) |
| 73 | Ta | Tantalum | 180.94788(2) |
| 74 | W | Tungsten | 183.84(1) |
| 75 | Re | Rhenium | 186.207(1) |
| 76 | Os | Osmium | 190.23(3) |
| 77 | Ir | Iridium | 192.217(3) |
| 78 | Pt | Platinum | 195.084(9) |
| 79 | Au | Gold | 196.966569(4) |
| 80 | Hg | Mercury | 200.59(2) |
| 81 | Ti | Thallium | 204.3833(2) |
| 82 | Pb | Lead | 207.2(1) |
| 83 | Bi | Bismuth | 208.98040(1) |
| 84 | Po | Polonium | [208.9824] |
| 85 | At | Astatine | [209.9871] |
| 86 | Rn | Radon | [222.0176] |
| 87 | Fr | Francium | [223.0197] |
| 88 | Ra | Radium | [226.0254] |

| Atomic Number | Symbol | Name | Average Atomic Mass |
|---|---|---|---|
| 89 | Ac | Actinium | [227.0277] |
| 90 | Th | Thorium | 232.03806(2) |
| 91 | Pa | Protactinium | 231.03588(2) |
| 92 | U | Uranium | 238.02891(3) |
| 93 | Np | Neptunium | [237.0482] |
| 94 | Pu | Plutonium | [244.0642] |
| 95 | Am | Americium | [243.0614] |
| 96 | Cm | Curium | [247.0703] |
| 97 | Bk | Berkelium | [247.0703] |
| 98 | Cf | Californium | [251.0796] |
| 99 | Es | Einsteinium | [252.0830] |
| 100 | Fm | Fermium | [257.0951] |
| 101 | Md | Mendelevium | [258.0984] |
| 102 | No | Nobelium | [259.1011] |
| 103 | Lr | Lawrencium | [262.110] |
| 104 | Rf | Rutherfordium | [263.1125] |
| 105 | Db | Dubnium | [262.1144] |
| 106 | Sg | Seaborgium | [266.1219] |
| 107 | Bh | Bohrium | [264.1247] |
| 108 | Hs | Hassium | [269.1341] |
| 109 | Mt | Meitnerium | [268.1388] |
| 110 | Ds | Darmstadtium | [272.1463] |
| 111 | Rg | Roentgenium | [272.1535] |
| 112 | Uub | Ununbium | [277] |
| 113 | Uut | Ununtrium | [284] |
| 114 | Uuq | Ununquadium | [289] |
| 115 | Uup | Ununpentium | [288] |
| 116 | Uuh | Ununhexium | [292] |
| 117 | Uus | Ununseptium | [292]‡ |
| 118 | Uuo | Ununoctium | [294] |

† A value in brackets, such as [259.1011], is the atomic mass of the most stable isotope unless it is an integer, in which case it is the mass number of the most stable isotope. In all other cases, the value is the relative atomic mass of common terrestrial composition, according to Atomic Weights of the Elements 2001, and includes its uncertainty in parenthesis. For example, the value of 1.00794(7) for hydrogen means that a normal terrestrial isotopic composition of hydrogen has a relative atomic mass of 1.00794 atomic mass units (u) with an uncertainty of 0.00007u, reflecting primarily local variability around the earth.

‡ This atomic mass is only an estimate, as this element has not yet been discovered.