

The Periodic Table of Elements by State Under Standard Conditions

Group 1 IA																		Group 13 IIIA						Group 14 IVA		Group 15 VA		Group 16 VIA		Group 17 VIIA		Group 18 VIIIA																																																																																																																																																																																																	
1 H Hydrogen 1.008 $1s^1$ 13.5984																		5 B Boron 10.81 $1s^2 2s^2 2p^1$ 8.2980	6 C Carbon 12.011 $1s^2 2s^2 2p^2$ 11.2603	7 N Nitrogen 14.007 $1s^2 2s^2 2p^3$ 14.5341	8 O Oxygen 15.999 $1s^2 2s^2 2p^4$ 13.6181	9 F Fluorine 18.9984 $1s^2 2s^2 2p^5$ 17.4228	10 Ne Neon 20.1797 $1s^2 2s^2 2p^6$ 21.5645																			13 Al Aluminum 26.9815 $Ne-3s^2 3p^1$ 5.9858	14 Si Silicon 28.085 $Ne-3s^2 3p^2$ 8.1517	15 P Phosphorus 30.9738 $Ne-3s^2 3p^3$ 10.4867	16 S Sulfur 33.06 $Ne-3s^2 3p^4$ 10.3600	17 Cl Chlorine 35.45 $Ne-3s^2 3p^5$ 12.9676	18 Ar Argon 39.948 $Ne-3s^2 3p^6$ 15.7596																			19 K Potassium 39.0983 $Ar-4s^1$ 4.3407	20 Ca Calcium 40.078 $Ar-4s^2$ 6.1132	21 Sc Scandium 44.9559 $Ar-3d^1 4s^2$ 6.5615	22 Ti Titanium 47.867 $Ar-3d^2 4s^2$ 6.8281	23 V Vanadium 50.9415 $Ar-3d^3 4s^2$ 6.7462	24 Cr Chromium 51.9961 $Ar-3d^4 4s^2$ 6.7665	25 Mn Manganese 54.9380 $Ar-3d^5 4s^2$ 7.4340	26 Fe Iron 55.845 $Ar-3d^6 4s^2$ 7.9025	27 Co Cobalt 58.9332 $Ar-3d^7 4s^2$ 7.8810	28 Ni Nickel 58.6934 $Ar-3d^8 4s^2$ 7.6399	29 Cu Copper 63.546 $Ar-3d^9 4s^2$ 7.7264	30 Zn Zinc 65.38 $Ar-3d^{10} 4s^2$ 9.3942	31 Ga Gallium 69.723 $Zn-4p^1$ 5.9993	32 Ge Germanium 72.630 $Zn-4p^2$ 7.8994	33 As Arsenic 74.9216 $Zn-4p^3$ 9.7886	34 Se Selenium 78.971 $Zn-4p^4$ 9.7524	35 Br Bromine 79.904 $Zn-4p^5$ 11.8138	36 Kr Krypton 83.798 $Zn-4p^6$ 13.9996																			37 Rb Rubidium 85.4678 $Kr-5s^1$ 4.1771	38 Sr Strontium 87.62 $Kr-5s^2$ 5.6949	39 Y Yttrium 88.90584 $Kr-5s^2 4d^1$ 6.2173	40 Zr Zirconium 91.224 $Kr-5s^2 4d^2$ 6.6339	41 Nb Niobium 92.90637 $Kr-5s^1 4d^4$ 6.7589	42 Mo Molybdenum 95.95 $Kr-5s^1 4d^5$ 7.0924	43 Tc Technetium (98) $Kr-5s^2 4d^5$ 7.1194	44 Ru Ruthenium 101.07 $Kr-5s^1 4d^7$ 7.3605	45 Rh Rhodium 102.9055 $Kr-5s^1 4d^8$ 7.4589	46 Pd Palladium 106.42 $Kr-4d^{10}$ 8.3369	47 Ag Silver 107.8682 $Kr-5s^1 4d^{10}$ 7.5762	48 Cd Cadmium 112.414 $Kr-5s^2 4d^{10}$ 8.9938	49 In Indium 114.818 $Cd-5p^1$ 5.7864	50 Sn Tin 118.710 $Cd-5p^2$ 7.3439	51 Sb Antimony 121.760 $Cd-5p^3$ 8.6084	52 Te Tellurium 127.60 $Cd-5p^4$ 9.0097	53 I Iodine 126.9048 $Cd-5p^5$ 10.4513	54 Xe Xenon 131.293 $Cd-5p^6$ 12.1298																			55 Cs Cesium 132.9055 $Xe-6s^1$ 3.8939	56 Ba Barium 137.327 $Xe-6s^2$ 5.2784																			72 Hf Hafnium 178.49 $Xe-4f^{14} 5d^2 6s^2$ 6.8251	73 Ta Tantalum 180.9479 $Xe-4f^{14} 5d^3 6s^2$ 7.5496	74 W Tungsten 183.84 $Xe-4f^{14} 5d^4 6s^2$ 7.8640	75 Re Rhenium 186.207 $Xe-4f^{14} 5d^5 6s^2$ 7.8335	76 Os Osmium 190.23 $Xe-4f^{14} 5d^6 6s^2$ 8.4382	77 Ir Iridium 192.217 $Xe-4f^{14} 5d^7 7s^2$ 8.9670	78 Pt Platinum 195.084 $Xe-4f^{14} 5d^9 6s$ 8.9588	79 Au Gold 196.9666 $Xe-4f^{14} 5d^{10} 6s$ 9.2256	80 Hg Mercury 200.592 $Xe-4f^{14} 5d^{10} 6s^2$ 10.4375	81 Tl Thallium 204.38 $Hg-6p^1$ 6.1083	82 Pb Lead 207.2 $Hg-6p^2$ 7.4167	83 Bi Bismuth 208.980 $Hg-6p^3$ 7.2855	84 Po Polonium (209) $Hg-6p^4$ 8.414	85 At Astatine (210) $Hg-6p^5$ 9.3175	86 Rn Radon (222) $Hg-6p^6$ 10.7485																			87 Fr Francium (223) $Rn-7s^1$ 4.0727	88 Ra Radium (226) $Rn-7s^2$ 5.2784																			104 Rf Rutherfordium (267) $Rn-5f^{14} 6d^2 7s^2$ 6.01	105 Db Dubnium (268) $Rn-5f^{14} 6d^3 7s^2$ 6.8	106 Sg Seaborgium (271) $Rn-5f^{14} 6d^4 7s^2$ 7.8	107 Bh Bohrium (270) $Rn-5f^{14} 6d^5 7s^2$ 7.7	108 Hs Hassium (269) $Rn-5f^{14} 6d^6 7s^2$ 7.6	109 Mt Meitnerium (278)	110 Ds Darmstadtium (281)	111 Rg Roentgenium (282)	112 Cn Copernicium (285)	113 Nh Nihonium (286)	114 Fl Flerovium (289)	115 Mc Moscovium (289)	116 Lv Livermorium (293)	117 Ts Tennessine (294)	118 Og Oganesson (294)

- Solid
- Liquid
- Gas
- Artificial

Actinides Lanthanides

57 La Lanthanum 138.9055 $Xe-5d^1 6s^2$ 5.5769	58 Ce Cerium 140.116 $Xe-4f^5 d6s^2$ 5.5386	59 Pr Praseodymium 140.908 $Xe-4f^3 6s^2$ 5.473	60 Nd Neodymium 144.242 $Xe-4f^4 6s^2$ 5.5250	61 Pm Promethium (145) $Xe-4f^5 6s^2$ 5.582	62 Sm Samarium 150.36 $Xe-4f^6 6s^2$ 5.6437	63 Eu Europium 151.964 $Xe-4f^7 6s^2$ 5.6704	64 Gd Gadolinium 157.25 $Xe-4f^8 6s^2$ 6.1498	65 Tb Terbium 158.9254 $Xe-4f^9 6s^2$ 5.8638	66 Dy Dysprosium 162.50 $Xe-4f^{10} 6s^2$ 5.9391	67 Ho Holmium 164.9303 $Xe-4f^{11} 6s^2$ 6.0215	68 Er Erbium 167.259 $Xe-4f^{12} 6s^2$ 6.1077	69 Tm Thulium 168.9342 $Xe-4f^{13} 6s^2$ 6.1843	70 Yb Ytterbium 173.045 $Xe-4f^{14} 6s^2$ 6.2542	71 Lu Lutetium 174.9668 $Xe-4f^{14} 5d^1 6s^2$ 5.4259
89 Ac Actinium (227) $Rn-6d^1 7s^2$ 5.3802	90 Th Thorium 232.04 $Rn-6d^2 7s^2$ 6.3067	91 Pa Protactinium 231.036 $Rn-5f^2 6d^1 7s^2$ 5.89	92 U Uranium 238.036 $Rn-5f^3 6d^1 7s^2$ 6.1941	93 Np Neptunium (237) $Rn-5f^4 6d^1 7s^2$ 6.2655	94 Pu Plutonium (247) $Rn-5f^6 7s^2$ 6.0258	95 Am Americium (243) $Rn-5f^7 7s^2$ 5.9738	96 Cm Curium (247) $Rn-5f^7 6d^1 7s^2$ 5.9914	97 Bk Berkelium (247) $Rn-5f^9 7s^2$ 6.1978	98 Cf Californium (251) $Rn-5f^{10} 7s^2$ 6.2817	99 Es Einsteinium (252) $Rn-5f^{11} 7s^2$ 6.3676	100 Fm Fermium (257) $Rn-5f^{12} 7s^2$ 6.50	101 Md Mendelevium (258) $Rn-5f^{13} 7s^2$ 6.58	102 No Nobelium (259) $Rn-5f^{14} 7s^2$ 6.65	103 Lr Lawrencium (266) $Rn-5f^{14} 7s^2 7p^1$ 4.96

Atomic Number

Symbol

Name

Mass (amu)

Ground State

Ionization Energy (eV)

1 H Hydrogen 1.008 $1s^1$ 13.5984
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The Periodic Table of Elements with Stable Nuclear Magnetic Spin 1/2

Group 1 IA	2 IIA											13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA	18 VIIIA
¹H Hydrogen 99.9885% 26.7522 1/2																	³He Helium 0.000134% -20.3789 1/2
Li Lithium	Be Beryllium											B Boron	¹³C Carbon 1.07% 6.7282 1/2	¹⁵N Nitrogen 0.364% -2.7126 1/2	O Oxygen	¹⁹F Fluorine 100% 25.1623 1/2	Ne Neon
Na Sodium	Mg Magnesium											Al Aluminum	²⁹Si Silicon 4.685% -5.3190 1/2	³¹P Phosphorus 100% 10.8394 1/2	S Sulfur	Cl Chlorine	Ar Argon
		3 IIIB	4 IVB	5 VB	6 VIB	7 VIIB	8	10	11 IB	12 IIB							
K Potassium	Ca Calcium	Sc Scandium	Ti Titanium	V Vanadium	Cr Chromium	Mn Manganese	⁵⁷Fe Iron 2.119% 0.86806 1/2	Co Cobalt	Ni Nickel	Cu Copper	Zn Zinc	Ga Gallium	Ge Germanium	As Arsenic	⁷⁷Se Selenium 7.63% 5.1254 1/2	Br Bromine	Kr Krypton
Rb Rubidium	Sr Strontium	⁵⁰Y Yttrium 100% -1.3163 1/2	Zr Zirconium	Nb Niobium	Mo Molybdenum	Tc Technetium	Ru Ruthenium	¹⁰³Rh Rhodium 100% -0.8468 1/2	Pd Palladium	^{107,109}Ag Silver 51.8/48.2% -1.09/-1.25 1/2, 1/2	Cd Cadmium	In Indium	^{117,119}Sn Tin 7.7/8.6% -9.59/-10.03 1/2, 1/2	Sb Antimony	^{123,125}Te Tellurium 0.9/7.1% -7.06/-8.51 1/2, 1/2	I Iodine	^{129,131}Xe Xenon 26.4/21.2% -7.45/2.21 1/2, 3/2
Cs Cesium	Ba Barium		Hf Hafnium	Ta Tantalum	W Tungsten	Re Rhenium	Os Osmium	Ir Iridium	Pt Platinum	Au Gold	Hg Mercury	Tl Thallium	Pb Lead	Bi Bismuth	Po Polonium	At Astatine	Rn Radon
Fr Francium	Ra Radium		Rf Rutherfordium	Db Dubnium	Sg Seaborgium	Bh Bohrium	Hs Hassium	Mt Meitnerium	Ds Darmstadtium	Rg Roentgenium	Cn Copernicium	Nh Nihonium	Fl Flerovium	Mc Moscovium	Lv Livermorium	Ts Tennessine	Og Oganesson

Spin 1/2
Spin 1

Actinides Lanthanides

La Lanthanum	Ce Cerium	Pr Praseodymium	Nd Neodymium	Pm Promethium	Sm Samarium	Eu Europium	Gd Gadolinium	Tb Terbium	Dy Dysprosium	Ho Holmium	Er Erbium	Tm Thulium	Yb Ytterbium	Lu Lutetium
Ac Actinium	Th Thorium	Pa Protactinium	U Uranium	Np Neptunium	Pu Plutonium	Am Americium	Cm Curium	Bk Berkelium	Cf Californium	Es Einsteinium	Fm Fermium	Md Mendelevium	No Nobelium	Lr Lawrencium

Atomic Number

Symbol

Name

Abundance

Gyromagnetic ratio ($10^7 \text{ rad s}^{-1} \text{ T}^{-1}$)

Spin

The Periodic Table of Elements by Nuclear Magnetic Spin (> 50% Abundant)

Group 1 IA												Group 13 IIIA	Group 14 IVA	Group 15 VA	Group 16 VIA	Group 17 VIIA	Group 18 VIIIA
1H Hydrogen 99.9885% 26.7522 1/2												11B Boron 80.1% 8.5847 3/2	12C Carbon 98.93% -	14N Nitrogen 99.636% 1.9338 1	16O Oxygen 99.76% -	19F Fluorine 100% 25.1623 1/2	20Ne Neon 90.48% -
7Li Lithium 92.41% 10.3977 3/2	9Be Beryllium 100% -3.7597 3/2																
			2H Deuterium 0.02% 4.1066 1														
23Na Sodium 100% 7.0809 3/2	24Mg Magnesium 79.9% -											27Al Aluminum 100% 6.9763 5/2	28Si Silicon 92.23% -	31P Phosphorus 100% 10.8394 1/2	32S Sulfur 94.99% -	35/37Cl Chlorine 75.8/24.2% 2.624/2.184 3/2, 3/2	40Ar Argon 99.60% -
39K Potassium 93.258% 1.2501 3/2	40Ca Calcium 96.941% -	45Sc Scandium 100% -6.5088 7/2	48Ti Titanium 73.72% -	51V Vanadium 99.750% 7.0455 7/2	52Cr Chromium 83.789% -	55Mn Manganese 100% 6.6453 5/2	56Fe Iron 91.75% -	59Co Cobalt 100% 6.332 7/2	58Ni Nickel 68.077% -	63Cu Copper 69.15% 7.1118 3/2	64Zn Zinc 49.2% -	69Ga Gallium 60.108% 6.4389 3/2	*Ge Germanium 84.7% -	75As Arsenic 100% 4.5962 3/2	80Se Selenium 49.80% -	79/81Br Bromine 50.6/49.31% 6.726/7.250 3/2, 3/2	84Kr Krypton 57.00% -
85Rb Rubidium 72.165% 2.593 5/2	88Sr Strontium 82.58% -	89Y Yttrium 100% -1.3163 1/2	90Zr Zirconium 51.45% -	93Nb Niobium 100% -	*Mo Molybdenum 74.53% -	Tc Technetium -	*Ru Ruthenium 70.18% -	103Rh Rhodium 100% -0.8468 1/2	*Pd Palladium 77.67% -	107,109Ag Silver 51.8/48.2% -1.09/-1.25 1/2, 1/2	*Cd Cadmium 74.98% -	115In Indium 95.71% 21.9125 9/2	*Sn Tin 83.39% -	121,123Sb Antimony 57.2/42.8% 6.44/3.49 5/2, 7/2	*Te Tellurium 92.0% -	127I Iodine 100% 5.3896 5/2	*Xe Xenon 52.38% -
Cs Cesium	Ba Barium		Hf Hafnium	Ta Tantalum	W Tungsten	Re Rhenium	Os Osmium	Ir Iridium	Pt Platinum	Au Gold	Hg Mercury	Tl Thallium	Pb Lead	Bi Bismuth	Po Polonium	At Astatine	Rn Radon
Fr Francium	Ra Radium		Rf Rutherfordium	Db Dubnium	Sg Seaborgium	Bh Bohrium	Hs Hassium	Mt Meitnerium	Ds Darmstadtium	Rg Roentgenium	Cn Copernicium	Nh Nihonium	Fl Flerovium	Mc Moscovium	Lv Livermorium	Ts Tennessine	Og Oganesson

- Inactive
- Spin 1/2
- Spin 1
- Spin 3/2
- Spin 5/2, 7/2, 9/2

Actinides Lanthanides

La Lanthanum	Ce Cerium	Pr Praseodymium	Nd Neodymium	Pm Promethium	Sm Samarium	Eu Europium	Gd Gadolinium	Tb Terbium	Dy Dysprosium	Ho Holmium	Er Erbium	Tm Thulium	Yb Ytterbium	Lu Lutetium
Ac Actinium	Th Thorium	Pa Protactinium	U Uranium	Np Neptunium	Pu Plutonium	Am Americium	Cm Curium	Bk Berkelium	Cf Californium	Es Einsteinium	Fm Fermium	Md Mendelevium	No Nobelium	Lr Lawrencium

Atomic Number

Symbol

Name

Abundance

Gyromagnetic ratio ($10^7 \text{ rad s}^{-1} \text{ T}^{-1}$)

Spin

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1 H	Atomic Number
Hydrogen	Symbol
1.008	Name
$1s^1$	Mass (amu)
13.5984	Ground State
	Ionization Energy (eV)