TABLE OF PERIODIC PROPERTIES OF THE ELEMENTS

Percent Ionic Character of a Single Chemical Bond

Difference in electronegativity	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2
Percent ionic character %	0.5	1	2	4	6	9	12	15	19	22	26	30	34	39	43	47	51	55	59	63	67	70	74	76	79	82	84	86	88	89	91	92

DATA CONCERNING THE MORE STABLE ELEMENTARY (SUBATOMIC) PARTICLES

	Neutron	Proton	Electron*	Neutrino	Photon
Symbol	n	P	e (e-)	ν	γ
Rest mass (kg)	1.67495×10^{-27}	1.67265×10^{-27}	9.1095×10^{-31}	~0	0
Relative atomic mass (^{12}C=12)	1.008665	1.007276	5.48580$\times10^{-4}$	~0	0
Charge (C)	0	1.60219×10^{-19}	-1.60219×10^{-19}	0	0
Radius (m)	8×10^{-16}	8×10^{-16}	$<1\times10^{-16}$	~0	0
Spin quantum number	1/2	1/2	1/2	1/2	1
Magnetic Moment†	-1.913 μ_N	2.793 μ_N	1.001 μ_B	0	0

* The positron (e+) has properties similar to those of the (negative) electron or beta particle except that its charge has opposite sign (+). The antineutrino ($\bar{\nu}$) has properties similar to those of the neutrino except that its spin (or rotation) is opposite in relation to its direction of propagation.

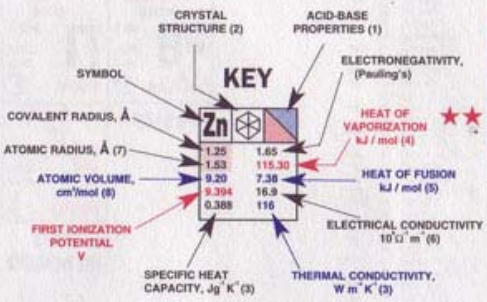
An antineutrino accompanies release of an electron in radioactive β (particle) decay, whereas a neutrino accompanies the release of a positron in β^+ decay.

†μ_B=Bohr magneton and μ_N=Nuclear magneton.

GROUP 1/IA	2/IIA	3/IIIB	4/IVB	5/VB	6/VIB	7/VIIB	8	9 VIIIB	10	11/IB	12/IIB	13/IIIA	14/IVA	15/VA	16/VIA	17/VIIA	18/VIIIA
H												B	C	N	O	F	He
0.32 2.20 0.79 0.4581 14.10 0.0585 13.598 — 14.304 0.1815												0.82 2.04 1.17 507.8 4.6 22.6 8.298 5×10^{12} 1.026 27.0	0.77 2.55 0.91 715 5.30 — 11.260 0.07 0.709 80-230	0.75 3.04 0.75 2.793 17.30 0.36 14.534 — 1.042 0.02598	0.73 3.44 0.65 3.410 14.0 0.222 13.618 — 0.918 0.2674	0.72 3.98 0.57 3.27 17.10 0.26 17.422 — 0.824 0.0279	0.93 — 0.49 0.084 31.80 0.021 24.587 — 5.193 0.152
Li	Be											Al	Si	P	S	Cl	Ne
1.23 0.98 2.05 147.1 13.10 3.0 5.392 11.7 3.582 84.7	0.90 1.57 1.40 297 5.0 11.71 9.323 25 1.825 200											1.18 1.61 1.82 290.8 10.0 10.7 5.986 37.7 0.90 237	1.11 1.90 1.46 359.0 12.1 50.2 8.152 4×10^{3} 0.70 148.	1.06 2.19 1.23 12.4 17.0 0.63 10.487 10^{-16} 0.769 0.235	1.02 2.58 1.09 10 15.50 1.73 10.360 5×10^{-16} 0.710 0.269	0.99 3.16 0.97 10.20 18.70 3.21 12.967 — 0.479 0.0089	0.98 — 0.86 6.506 24.20 1.188 15.759 — 0.520 0.0177
Na	Mg																
1.54 0.93 2.23 98.01 23.70 2.601 5.139 20.1 1.228 141	1.36 1.31 1.72 127.6 14.0 8.95 7.646 22.4 1.02 156																
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
2.03 0.82 2.77 76.9 45.30 2.33 4.341 16.4 0.757 102.5	1.74 1.00 2.23 154.67 29.90 8.53 6.113 31.3 0.647 200	1.44 1.36 2.09 304.80 15.0 16.11 6.56 1.5 0.568 15.8	1.32 1.54 2.00 425.2 10.60 18.6 6.83 2.6 0.523 21.9	1.22 1.63 1.92 446.7 8.35 22.8 6.75 4.0 0.489 30.7	1.18 1.66 1.85 338.5 7.23 20 6.766 7.9 0.449 93.7	1.17 1.55 1.79 219.74 7.39 14.64 7.434 0.5 0.479 7.82	1.17 1.83 1.72 349.5 7.1 13.8 7.902 11.2 0.449 80.2	1.16 1.88 1.67 373.3 6.70 16.2 7.88 17.9 0.421 100	1.15 1.91 1.62 377.5 6.60 17.2 7.640 14.6 0.444 90.7	1.17 1.90 1.57 300.5 7.1 13.14 7.726 60.7 0.385 401	1.25 1.65 1.53 115.31 9.2 7.38 9.394 16.9 0.388 116	1.26 1.81 1.81 256.06 11.8 5.59 5.999 1.8 0.371 40.6	1.22 2.01 1.52 334.30 13.0 31.80 7.899 3×10^{3} 0.32 59.9	1.20 2.18 1.33 32.4 13.1 27.7 8.79 3.8 0.29 50	1.16 2.55 1.22 26.32 16.50 5.44 9.752 6 0.321 2.04	1.14 2.96 1.12 14.725 23.5 5.285 11.814 10^{-16} 0.226 0.122	1.89 — 1.03 9.03 32.20 1.64 13.999 — 0.248 0.00949
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
2.16 0.82 2.98 69.2 55.9 2.34 4.177 47.8 0.363 58.2	1.91 0.95 2.45 136.9 33.7 8.2 5.695 5.0 0.301 35.3	1.62 1.22 2.27 393.30 19.8 17.15 6.22 1.8 0.30 17.2	1.45 1.33 2.16 590.5 14.1 21 6.63 2.3 0.278 22.7	1.34 1.6 2.08 690.1 10.80 26.9 6.76 6.6 0.265 53.7	1.30 2.16 2.01 590.4 9.4 36 7.092 17.3 0.25 138	1.27 1.9 1.95 502 8.5 23 7.28 0.001 0.24 50.6	1.25 2.2 1.89 567.77 8.3 25.52 7.36 14.9 0.238 117	1.25 2.28 1.83 495.39 8.30 21.76 7.46 23 0.243 150	1.28 2.20 1.79 393.3 8.9 16.74 8.34 10.0 0.244 71.8	1.34 1.93 1.75 250.63 10.3 11.3 7.576 62.9 0.235 429	1.41 1.69 1.71 99.87 13.1 6.07 8.993 14.7 0.232 96.8	1.44 1.78 2.00 226.35 15.7 3.26 5.786 3.4 0.233 81.6	1.41 1.96 1.72 290.37 16.3 7.2 7.344 8.7 0.228 66.6	1.40 2.05 1.53 67.97 18.40 19.83 8.608 2.6 0.207 24.3	1.36 2.1 1.42 50.63 20.5 17.49 9.009 2×10^{-4} 0.202 2.35	1.33 2.66 1.32 20.9 25.70 7.76 10.451 10^{-11} 0.145 0.449	1.31 2.6 1.24 12.84 42.90 2.30 12.130 — 0.158 0.00569
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
2.35 0.79 3.34 67.740 70 2.09 3.864 5.3 0.24 35.9	1.98 0.89 2.78 140.2 39.0 8.01 5.212 2.8 0.204 18.4	1.25 1.10 2.74 399.57 22.50 11.30 5.58 1.9 0.195 13.5	1.44 1.3 2.16 681.07 13.60 21.76 6.825 3.4 0.144 23.0	1.34 1.5 2.09 737.0 10.90 36 7.55 8.1 0.140 57.5	1.30 2.36 2.02 422.58 9.53 35.4 7.864 18.2 0.132 174	1.28 1.9 1.97 707.10 8.85 33.05 7.833 5.8 0.137 47.9	1.26 2.2 1.92 627.6 8.43 29.29 8.438 12.3 0.130 87.6	1.27 2.20 1.87 563.58 8.54 26.36 8.967 21.3 0.131 147	1.30 2.28 1.83 510.45 9.10 19.66 8.959 9.4 0.13 71.8	1.34 2.54 1.79 324.43 10.20 12.36 9.225 48.8 0.129 317	1.49 2.00 1.76 59.30 14.80 2.292 10.437 1.0 0.140 8.34	1.48 2.04 2.08 162.09 17.20 4.27 6.108 5.6 0.129 46.1	1.47 2.33 1.81 177.9 18.30 4.77 7.416 4.8 0.129 35.3	1.46 2.02 1.83 179 21.30 11.0 7.289 0.9 0.122 7.87	1.53 2.0 1.53 120 22.70 13 8.41 0.7 — 20	1.47 2.2 1.43 30 — 12* — — — 1.7	— — 1.34 16.4 50.5 2.9 10.748 — 0.094 0.00364
Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Uuu	Uub	Uut	Uuq	Uup	Uuh	Uus	Uuo
— 0.7 2.1 64* — 2.1* 4.073 — — 15	— 0.9 — 136.82 45.2 8.37 5.278 1.0 0.094 18.8	— 1.1 — — 22.5 — 5.17 — 0.120 12	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —

*ESTIMATED VALUES

★	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	DY	Ho	Er	Tm	Yb	Lu
	1.65 1.12 2.70 313.80 21.0 9.20 5.538 1.4 0.19 11.4	1.65 1.13 2.67 332.63 20.80 10.04 5.473 1.5 0.193 12.5	1.64 1.14 2.64 283.68 20.6 10.88 5.525 1.6 0.190 16.5	1.63 1.13 2.62 — 22.4 — 5.582 2 — 17.9*	1.62 1.17 2.59 191.63 19.90 11.09 5.644 1.1 0.197 13.3	1.85 1.2 2.56 175.73 28.9 10.46 5.67 1.1 0.182 13.9	1.61 1.20 2.54 311.71 19.90 15.48 6.15 0.8 0.236 10.6	1.59 1.1 2.51 — 19.20 — 5.864 0.9 0.182 11.1	1.59 1.22 2.49 230 18.70 17.15 5.939 1.1 0.173 10.7	1.58 1.23 2.47 251.04 18.40 17.15 6.021 1.1 0.165 16.2	1.57 1.24 2.45 292.88 18.40 17.15 6.108 1.2 0.168 14.3	1.56 1.25 2.42 191* 18.10 16.8* 6.184 1.3 0.160 16.8	1.70 1.1 2.40 128* 24.80 7.7* 6.254 3.7 0.155 34.9	1.56 1.27 2.25 365* 17.80 18.6* 5.426 1.5 0.154 16.4
	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr
	1.65 1.3 — 543.92 19.90 15.65 6.31 7.1 0.113 54	— 1.5 — — 15.0 — 5.89 5.6 — 47	1.42 1.38 — 422.58 12.50 15.48 6.194 3.6 0.12 27.6	— 1.36 — — 21.10 — 6.266 0.8 — 6.3	1.08 1.28 — — 12.32 — 6.026 0.7 0.13* 8.74	— 1.3* — — 20.8 — 5.974 0.7 — 10*	— 1.3* — — 18.3 — 5.991 — — 10*	— 1.3* — — — — 6.198 — — 10*	— 1.3* — — — — 6.282 — — 10*	— 1.3* — — — — 6.42 — — 10*	— 1.3* — — — — 6.5 — — 10*	— 1.3* — — — — 6.58 — — 10*	— 1.3* — — — — 6.65 — — 10*	— 1.3* — — — — 4.9* — — 10*



NOTES: (1) For representative oxides (higher valence) of group. Oxide is acidic if color is red, basic if color is blue and amphoteric if both colors are shown. Intensity of color indicates relative strength.

(2) Cubic, face centered; cubic, body centered; cubic; hexagonal; rhombohedral; tetragonal; orthorhombic; monoclinic.

(3) At 300 K (27°C)
(4) At boiling point
(5) At melting point
(6) Generally at 293 K (20°C) for polycrystalline material
(7) Quantum mechanical value for free atom
(8) From density at 300 K (27°C) for liquid and solid elements; values for gaseous elements refer to liquid state at boiling point

The A & B subgroup designations, are those recommended by the International Union of Pure and Applied Chemistry.