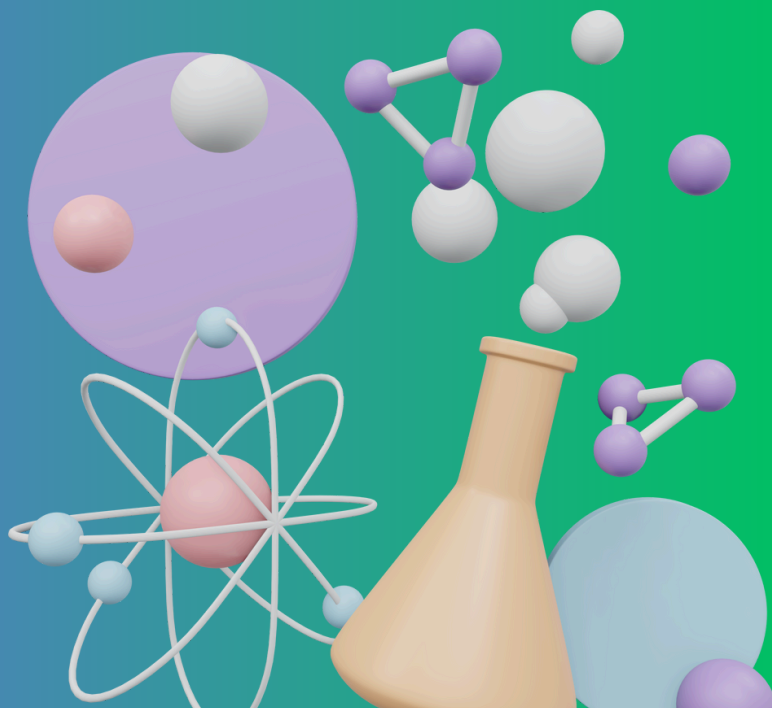


# 118

## PERIODIC TABLE OF ELEMENTS NAMES AND SYMBOLS



PRESENT BY  
Symbol



# Table Of Content

No	Name	Page No
1	Hydrogen	06
2	Helium	06
3	Lithium	06
4	Beryllium	06
5	Boron	06
6	Carbon	06
7	Nitrogen	06
8	Oxygen	06
9	Fluorine	07
10	Neon	07
11	Sodium	07
12	Magnesium	07
13	Aluminium	07
14	Silicon	07
15	Phosphorus	07
16	Sulfur	07
17	Chlorine	08
18	Argon	08
19	Potassium	08
20	Calcium	08
21	Scandium	08
22	Titanium	08
23	Vanadium	08
24	Chromium	08
25	Manganese	09
26	Iron	09
27	Cobalt	09
28	Nickel	09
29	Copper	09
30	Zinc	09
31	Gallium	09
32	Germanium	09
33	Arsenic	10
34	Selenium	10
35	Bromine	10
36	Krypton	10
37	Rubidium	10
38	Strontium	10
39	Yttrium	10
40	Zirconium	10

41	Niobium	11
42	Molybdenum	11
43	Technetium	11
44	Ruthenium	11
45	Rhodium	11
46	Palladium	11
47	Silver	11
48	Cadmium	11
49	Indium	12
50	Tin	12
51	Antimony	12
52	Tellurium	12
53	Iodine	12
54	Xenon	12
55	Caesium	12
56	Barium	12
57	Lanthanum	13
58	Cerium	13
59	Praseodymium	13
60	Neodymium	13
61	Promethium	13
62	Samarium	13
63	Europium	13
64	Gadolinium	13
65	Terbium	14
66	Dysprosium	14
67	Holmium	14
68	Erbium	14
69	Thulium	14
70	Ytterbium	14
71	Lutetium	14
72	Hafnium	14
73	Tantalum	15
74	Tungsten	15
75	Rhenium	15
76	Osmium	15
77	Iridium	15
78	Platinum	15
79	Gold	15
80	Mercury	15

81	Thallium	16
82	Lead	16
83	Bismuth	16
84	Polonium	16
85	Astatine	16
86	Radon	16
87	Francium	16
88	Radium	16
89	Actinium	17
90	Thorium	17
91	Protactinium	17
92	Uranium	17
93	Neptunium	17
94	Plutonium	17
95	Americium	17
96	Curium	17
97	Berkelium	18
98	Californium	18
99	Einsteinium	18
100	Fermium	18
101	Mendelevium	18
102	Nobelium	18
103	Lawrencium	18
104	Rutherfordium	18
105	Dubnium	19
106	Seaborgium	19
107	Bohrium	19
108	Hassium	19
109	Meitnerium	19
110	Darmstadtium	19
111	Roentgenium	19
112	Copernicium	19
113	Nihonium	20
114	Flerovium	20
115	Moscovium	20
116	Livermorium	20
117	Tennessine	20
118	Oganesson	20

# Full Periodic Table of the Elements

Standard State at 25°C; 1 atm  
 Ar – gas  
 Br – Liquid  
 Na – Solid

Relative Atomic Mass (A)  
 Group IUPAC  
 Atomic Number (Z)  
 Element Symbol  
 Element Name

Metals  
 Semimetals  
 Nonmetals  
 Lanthanide/Actinide

1	IA	1	1.0079	H	HYDROGEN	2	IIA	4	9.0122	Be	BERYLLIUM	10	VIIIA	2	4.0026	He	HELIUM																																																												
3		3	6.941	Li	LITHIUM	4		4	9.0122	Be	BERYLLIUM	5		5	10.811	B	BORON	6	12.011	C	CARBON	7	14.007	N	NITROGEN	8	15.999	O	OXYGEN	9	18.998	F	FLUORINE	10	20.180	Ne	NEON																																								
11		11	22.990	Na	SODIUM	12		12	24.305	Mg	MAGNESIUM	13		13	26.982	Al	ALUMINIUM	14	28.086	Si	SILICON	15	30.974	P	PHOSPHORUS	16	32.065	S	SULFUR	17	35.453	Cl	CHLORINE	18	39.984	Ar	ARGON																																								
19		19	39.098	K	POTASSIUM	20		20	40.078	Ca	CALCIUM	21		21	44.956	Sc	SCANDIUM	22	47.867	Ti	TITANIUM	23	50.942	V	VANADIUM	24	51.996	Cr	CHROMIUM	25	54.938	Mn	MANGANESE	26	55.845	Fe	IRON	27	58.993	Co	COBALT	28	58.693	Ni	NICKEL	29	63.546	Cu	COPPER	30	65.39	Zn	ZINC	31	69.723	Ga	GALLIUM	32	72.61	Ge	GERMANIUM	33	74.922	As	ARSENIC	34	78.96	Se	SELENIUM	35	79.904	Br	BROMINE	36	83.80	Kr	KRYPTON
37		37	85.468	Rb	RUBIDIUM	38		38	87.62	Sr	STRONTIUM	39		39	88.906	Y	YTTRIUM	40	91.224	Zr	ZIRCONIUM	41	92.906	Nb	NIObIUM	42	95.94	Mo	MOLYBDENUM	43	98	Tc	TECHNETIUM	44	101.07	Ru	RUTHENIUM	45	102.91	Rh	RHODIUM	46	106.42	Pd	PALLADIUM	47	107.87	Ag	SILVER	48	112.41	Cd	CADMIUM	49	114.82	In	INDIUM	50	118.71	Sn	TIN	51	121.76	Sb	ANTIMONY	52	127.60	Te	TELLURIUM	53	126.90	I	IODINE	54	131.29	Xe	XENON
55		55	132.91	Cs	CESIUM	56		56	137.33	Ba	BARIUM	57-71		La-Lu	LANTHANIDES	72	178.49	Hf	HAFNIUM	73	180.95	Ta	TANTALUM	74	183.84	W	TUNGSTEN	75	186.21	Re	RHENIUM	76	190.23	Os	OSMIUM	77	192.22	Ir	IRIDIUM	78	195.08	Pt	PLATINUM	79	196.97	Au	GOLD	80	200.59	Hg	MERCURY	81	204.38	Tl	THALLIUM	82	207.2	Pb	LEAD	83	208.98	Bi	BISMUTH	84 (209)		Po	POLONIUM	85 (210)		At	ASTATINE	86 (222)		Rn	RADON		
87		87	(223)	Fr	FRANCIUM	88		88	(226)	Ra	RADIUM	89-103		Ac-Lr	ACTINIDES	104 (261)		Rf	RUTHERFORDIUM	105 (262)		Db	DUBNIUM	106 (266)		Sg	SEABORGIUM	107 (264)		Bh	BOHRIUM	108 (277)		Hs	HASSIUM	109 (268)		Mt	MEITNERIUM	110 (281)		Ds	DARMSTADIUM	111 (272)		Rg	ROSENTHIUM	112 (285)		Cn	COPERNICIUM	114 (287)		Fl	FLEROVIUM																						

Lanthanide Series

57	138.91	58	140.12	59	140.91	60	144.24	61 (145)	62	150.36	63	151.96	64	157.25	65	158.93	66	162.50	67	164.93	68	167.26	69	168.93	70	173.04	71	174.97
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu														
LANTHANUM	CERIUM	PRASEODYMIUM	NEODYMIUM	PROMETHIUM	SAMARIUM	EUROPIUM	GADOLINIUM	TERBIUM	DYSPROSIUM	HOLMIUM	ERBIUM	THULIUM	YTTERIUM	LUTETIUM														

Actinide Series

89 (227)	90	232.04	91	231.04	92	238.03	93 (237)	94 (244)	95 (243)	96 (247)	97 (247)	98 (251)	99 (252)	100 (257)	101 (258)	102 (259)	103 (262)
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr			
ACTINIUM	THORIUM	PROTACTINIUM	URANIUM	NEPTUNIUM	PLUTONIUM	AMERICIUM	CURIUM	BERKELIUM	CALIFORNIUM	EINSTEINIUM	FERMIUM	MENDELEVIUM	NOBELIUM	LAWRENCIUM			

1 1  
**H**  
 Hydrogen  
 1.008

Series	Reactive nonmetals
Write-up	<a href="#">Hydrogen</a> Wikipedia
State at 0 °C	Gas
Weight	1.008 u
Energy levels	1
Electronegativity	2.20

Melting point	-259.1 °C
Boiling point	-252.9 °C
Electron affinity	72.8 kJ/mol
Ionization, 1st	1,312.0 kJ/mol
Radius, calculated	53 pm
Hardness, Brinell	N/A MPa

Modulus, bulk	N/A GPa
Density, STP	0.0899 kg/m³
Conductivity, thermal	0.1805 W/mK
Heat, specific	14,300 J/kgK
Abundance, universe	75 %
Discovered	1766 AD

2 2  
**He**  
 Helium  
 4.0026

Series	Noble gases
Write-up	<a href="#">Helium</a> Wikipedia
State at 0 °C	Gas
Weight	4.002602 u
Energy levels	2
Electronegativity	N/A

Melting point	N/A °C
Boiling point	-269 °C
Electron affinity	0 kJ/mol
Ionization, 1st	2,372.3 kJ/mol
Radius, calculated	31 pm
Hardness, Brinell	N/A MPa

Modulus, bulk	N/A GPa
Density, STP	0.1785 kg/m³
Conductivity, thermal	0.1513 W/mK
Heat, specific	5,193.1 J/kgK
Abundance, universe	23 %
Discovered	1895 AD

3 2  
**Li**  
 Lithium  
 6.94

Series	Alkali metals
Write-up	<a href="#">Lithium</a> Wikipedia
State at 0 °C	Solid
Weight	6.94 u
Energy levels	2, 1
Electronegativity	0.98

Melting point	180.54 °C
Boiling point	1,342 °C
Electron affinity	59.6 kJ/mol
Ionization, 1st	520.2 kJ/mol
Radius, calculated	167 pm
Hardness, Brinell	N/A MPa

Modulus, bulk	11 GPa
Density, STP	535 kg/m³
Conductivity, thermal	85 W/mK
Heat, specific	3,570 J/kgK
Abundance, universe	6.0E-7 %
Discovered	1817 AD

4 2  
**Be**  
 Beryllium  
 9.0122

Series	Alkaline earth metals
Write-up	<a href="#">Beryllium</a> Wikipedia
State at 0 °C	Solid
Weight	9.0121831 u
Energy levels	2, 2
Electronegativity	1.57

Melting point	1,287 °C
Boiling point	2,470 °C
Electron affinity	0 kJ/mol
Ionization, 1st	899.5 kJ/mol
Radius, calculated	112 pm
Hardness, Brinell	600 MPa

Modulus, bulk	130 GPa
Density, STP	1,848 kg/m³
Conductivity, thermal	190 W/mK
Heat, specific	1,820 J/kgK
Abundance, universe	1.00E-7 %
Discovered	1797 AD

5 2  
**B**  
 Boron  
 10.81

Series	Metalloids
Write-up	<a href="#">Boron</a> Wikipedia
State at 0 °C	Solid
Weight	10.81 u
Energy levels	2, 3
Electronegativity	2.04

Melting point	2,075 °C
Boiling point	4,000 °C
Electron affinity	26.7 kJ/mol
Ionization, 1st	800.6 kJ/mol
Radius, calculated	87 pm
Hardness, Brinell	N/A MPa

Modulus, bulk	320 GPa
Density, STP	2,460 kg/m³
Conductivity, thermal	27 W/mK
Heat, specific	1,030 J/kgK
Abundance, universe	1.00E-7 %
Discovered	1808 AD

6 2  
**C**  
 Carbon  
 12.011

Series	Reactive nonmetals
Write-up	<a href="#">Carbon</a> Wikipedia
State at 0 °C	Solid
Weight	12.011 u
Energy levels	2, 4
Electronegativity	2.55

Melting point	3,642 °C
Boiling point	3,642 °C
Electron affinity	153.9 kJ/mol
Ionization, 1st	1,086.5 kJ/mol
Radius, calculated	67 pm
Hardness, Brinell	N/A MPa

Modulus, bulk	33 GPa
Density, STP	2,260 kg/m³
Conductivity, thermal	140 W/mK
Heat, specific	710 J/kgK
Abundance, universe	0.50 %
Discovered	3750 BC

7 2  
**N**  
 Nitrogen  
 14.007

Series	Reactive nonmetals
Write-up	<a href="#">Nitrogen</a> Wikipedia
State at 0 °C	Gas
Weight	14.007 u
Energy levels	2, 5
Electronegativity	3.04

Melting point	-210.1 °C
Boiling point	-195.8 °C
Electron affinity	7 kJ/mol
Ionization, 1st	1,402.3 kJ/mol
Radius, calculated	56 pm
Hardness, Brinell	N/A MPa

Modulus, bulk	N/A GPa
Density, STP	1.251 kg/m³
Conductivity, thermal	0.02583 W/mK
Heat, specific	1,040 J/kgK
Abundance, universe	0.100 %
Discovered	1772 AD

8 2  
**O**  
 Oxygen  
 15.999

Series	Reactive nonmetals
Write-up	<a href="#">Oxygen</a> Wikipedia
State at 0 °C	Gas
Weight	15.999 u
Energy levels	2, 6
Electronegativity	3.44

Melting point	-218 °C
Boiling point	-183 °C
Electron affinity	141 kJ/mol
Ionization, 1st	1,313.9 kJ/mol
Radius, calculated	48 pm
Hardness, Brinell	N/A MPa

Modulus, bulk	N/A GPa
Density, STP	1,429 kg/m³
Conductivity, thermal	0.02658 W/mK
Heat, specific	919 J/kgK
Abundance, universe	1.00 %
Discovered	1774 AD

<b>9</b> <b>F</b> Fluorine 18.998	2 7	Series <b>Reactive nonmetals</b> Write-up <a href="#">Fluorine</a> Wikipedia State at <u>0</u> °C Gas Weight 18.998403162 u Energy levels 2, 7 Electronegativity 3.98	Melting point -220 °C Boiling point -188.1 °C Electron affinity 328 kJ/mol Ionization, 1st 1,681.0 kJ/mol Radius, calculated 42 pm Hardness, Brinell N/A MPa	Modulus, bulk N/A GPa Density, STP 1.696 kg/m <sup>3</sup> Conductivity, thermal 0.0277 W/mK Heat, specific 824 J/kgK Abundance, universe 0.000040 % Discovered 1886 AD				
	<b>10</b> <b>Ne</b> Neon 20.180	2 8	Series <b>Noble gases</b> Write-up <a href="#">Neon</a> Wikipedia State at <u>0</u> °C Gas Weight 20.1797 u Energy levels 2, 8 Electronegativity N/A	Melting point -248.6 °C Boiling point -246.1 °C Electron affinity 0 kJ/mol Ionization, 1st 2,080.7 kJ/mol Radius, calculated 38 pm Hardness, Brinell N/A MPa	Modulus, bulk N/A GPa Density, STP 0.900 kg/m <sup>3</sup> Conductivity, thermal 0.0491 W/mK Heat, specific 1,030.0 J/kgK Abundance, universe 0.13 % Discovered 1898 AD			
		<b>11</b> <b>Na</b> Sodium 22.990	2 8 1	Series <b>Alkali metals</b> Write-up <a href="#">Sodium</a> Wikipedia State at <u>0</u> °C Solid Weight 22.98976928 u Energy levels 2, 8, 1 Electronegativity 0.93	Melting point 97.720 °C Boiling point 882.9 °C Electron affinity 52.8 kJ/mol Ionization, 1st 495.8 kJ/mol Radius, calculated 190 pm Hardness, Brinell 0.69 MPa	Modulus, bulk 6.3 GPa Density, STP 968 kg/m <sup>3</sup> Conductivity, thermal 140 W/mK Heat, specific 1,230 J/kgK Abundance, universe 0.0020 % Discovered 1807 AD		
			<b>12</b> <b>Mg</b> Magnesium 24.305	2 8 2	Series <b>Alkaline earth metals</b> Write-up <a href="#">Magnesium</a> Wikipedia State at <u>0</u> °C Solid Weight 24.305 u Energy levels 2, 8, 2 Electronegativity 1.31	Melting point 650 °C Boiling point 1,090 °C Electron affinity 0 kJ/mol Ionization, 1st 737.7 kJ/mol Radius, calculated 145 pm Hardness, Brinell 260 MPa	Modulus, bulk 45 GPa Density, STP 1,738 kg/m <sup>3</sup> Conductivity, thermal 160 W/mK Heat, specific 1,020 J/kgK Abundance, universe 0.060 % Discovered 1755 AD	
				<b>13</b> <b>Al</b> Aluminium 26.982	2 8 3	Series <b>Post-transition metals</b> Write-up <a href="#">Aluminium</a> Wikipedia State at <u>0</u> °C Solid Weight 26.9815384 u Energy levels 2, 8, 3 Electronegativity 1.61	Melting point 660.32 °C Boiling point 2,519 °C Electron affinity 42.5 kJ/mol Ionization, 1st 577.5 kJ/mol Radius, calculated 118 pm Hardness, Brinell 245 MPa	Modulus, bulk 76 GPa Density, STP 2,700 kg/m <sup>3</sup> Conductivity, thermal 235 W/mK Heat, specific 904 J/kgK Abundance, universe 0.0050 % Discovered 1825 AD
					<b>14</b> <b>Si</b> Silicon 28.085	2 8 4	Series <b>Metalloids</b> Write-up <a href="#">Silicon</a> Wikipedia State at <u>0</u> °C Solid Weight 28.085 u Energy levels 2, 8, 4 Electronegativity 1.90	Melting point 1,414 °C Boiling point 2,900 °C Electron affinity 133.6 kJ/mol Ionization, 1st 786.5 kJ/mol Radius, calculated 111 pm Hardness, Brinell N/A MPa
<b>15</b> <b>P</b> Phosphorus 30.974						2 8 5	Series <b>Reactive nonmetals</b> Write-up <a href="#">Phosphorus</a> Wikipedia State at <u>0</u> °C Solid Weight 30.973761998 u Energy levels 2, 8, 5 Electronegativity 2.19	Melting point 44.15 °C Boiling point 280.5 °C Electron affinity 72 kJ/mol Ionization, 1st 1,011.8 kJ/mol Radius, calculated 98 pm Hardness, Brinell N/A MPa
	<b>16</b> <b>S</b> Sulfur 32.06					2 8 6	Series <b>Reactive nonmetals</b> Write-up <a href="#">Sulfur</a> Wikipedia State at <u>0</u> °C Solid Weight 32.06 u Energy levels 2, 8, 6 Electronegativity 2.58	Melting point 115.21 °C Boiling point 444.72 °C Electron affinity 200 kJ/mol Ionization, 1st 999.6 kJ/mol Radius, calculated 88 pm Hardness, Brinell N/A MPa

17 <b>Cl</b> Chlorine 35.45	2 8 7	Series	Reactive nonmetals	Melting point	-101.5 °C	Modulus, bulk	1.1 GPa
		Write-up	<a href="#">Chlorine</a> Wikipedia	Boiling point	-34.040 °C	Density, STP	3.214 kg/m <sup>3</sup>
18 <b>Ar</b> Argon 39.948	2 8 8	State at 0 °C	Gas	Electron affinity	349 kJ/mol	Conductivity, thermal	0.0089 W/mK
		Weight	35.45 u	Ionization, 1st	1,251.2 kJ/mol	Heat, specific	478.2 J/kgK
19 <b>K</b> Potassium 39.098	2 8 8 1	Energy levels	2, 8, 7	Radius, calculated	79 pm	Abundance, universe	0.000100 %
		Electronegativity	3.16	Hardness, Brinell	N/A MPa	Discovered	1774 AD
20 <b>Ca</b> Calcium 40.078	2 8 8 2	Series	Noble gases	Melting point	-189 °C	Modulus, bulk	N/A GPa
		Write-up	<a href="#">Argon</a> Wikipedia	Boiling point	-186 °C	Density, STP	1.784 kg/m <sup>3</sup>
21 <b>Sc</b> Scandium 44.956	2 8 9 2	State at 0 °C	Gas	Electron affinity	0 kJ/mol	Conductivity, thermal	0.01772 W/mK
		Weight	39.948 u	Ionization, 1st	1,520.6 kJ/mol	Heat, specific	520.33 J/kgK
22 <b>Ti</b> Titanium 47.867	2 8 10 2	Energy levels	2, 8, 8	Radius, calculated	71 pm	Abundance, universe	0.020 %
		Electronegativity	N/A	Hardness, Brinell	N/A MPa	Discovered	1894 AD
23 <b>V</b> Vanadium 50.942	2 8 11 2	Series	Alkali metals	Melting point	63.380 °C	Modulus, bulk	3.1 GPa
		Write-up	<a href="#">Potassium</a> Wikipedia	Boiling point	758.9 °C	Density, STP	856 kg/m <sup>3</sup>
24 <b>Cr</b> Chromium 51.996	2 8 13 1	State at 0 °C	Solid	Electron affinity	48.4 kJ/mol	Conductivity, thermal	100 W/mK
		Weight	39.0983 u	Ionization, 1st	418.8 kJ/mol	Heat, specific	757 J/kgK
25 <b>Mn</b> Manganese 54.938	2 8 13 2	Energy levels	2, 8, 8, 1	Radius, calculated	243 pm	Abundance, universe	0.00030 %
		Electronegativity	0.82	Hardness, Brinell	0.363 MPa	Discovered	1807 AD
26 <b>Fe</b> Iron 55.845	2 8 14 2	Series	Alkaline earth metals	Melting point	841.9 °C	Modulus, bulk	17 GPa
		Write-up	<a href="#">Calcium</a> Wikipedia	Boiling point	1,484 °C	Density, STP	1,550 kg/m <sup>3</sup>
27 <b>Co</b> Cobalt 58.933	2 8 15 2	State at 0 °C	Solid	Electron affinity	2.37 kJ/mol	Conductivity, thermal	200 W/mK
		Weight	40.078 u	Ionization, 1st	589.8 kJ/mol	Heat, specific	631 J/kgK
28 <b>Ni</b> Nickel 58.693	2 8 16 2	Energy levels	2, 8, 8, 2	Radius, calculated	194 pm	Abundance, universe	0.0070 %
		Electronegativity	1.0	Hardness, Brinell	167 MPa	Discovered	1808 AD
29 <b>Cu</b> Copper 63.546	2 8 18 1	Series	Transition metals	Melting point	1,541 °C	Modulus, bulk	57 GPa
		Write-up	<a href="#">Scandium</a> Wikipedia	Boiling point	2,830 °C	Density, STP	2,985 kg/m <sup>3</sup>
30 <b>Zn</b> Zinc 65.38	2 8 18 2	State at 0 °C	Solid	Electron affinity	18.1 kJ/mol	Conductivity, thermal	16 W/mK
		Weight	44.955907 u	Ionization, 1st	633.1 kJ/mol	Heat, specific	567 J/kgK
31 <b>Ga</b> Gallium 69.723	2 8 18 3	Energy levels	2, 8, 9, 2	Radius, calculated	184 pm	Abundance, universe	3.0E-6 %
		Electronegativity	1.36	Hardness, Brinell	750 MPa	Discovered	1879 AD
32 <b>Ge</b> Germanium 72.630	2 8 18 3	Series	Transition metals	Melting point	1,668 °C	Modulus, bulk	110 GPa
		Write-up	<a href="#">Titanium</a> Wikipedia	Boiling point	3,287 °C	Density, STP	4,507 kg/m <sup>3</sup>
33 <b>As</b> Arsenic 74.9216	2 8 18 3	State at 0 °C	Solid	Electron affinity	7.6 kJ/mol	Conductivity, thermal	22 W/mK
		Weight	47.867 u	Ionization, 1st	658.8 kJ/mol	Heat, specific	520 J/kgK
34 <b>Se</b> Selenium 78.96	2 8 18 4	Energy levels	2, 8, 10, 2	Radius, calculated	176 pm	Abundance, universe	0.00030 %
		Electronegativity	1.54	Hardness, Brinell	716 MPa	Discovered	1791 AD
35 <b>Br</b> Bromine 79.904	2 8 18 5	Series	Transition metals	Melting point	1,668 °C	Modulus, bulk	110 GPa
		Write-up	<a href="#">Vanadium</a> Wikipedia	Boiling point	3,407 °C	Density, STP	6,110 kg/m <sup>3</sup>
36 <b>Kr</b> Krypton 83.80	2 8 18 6	State at 0 °C	Solid	Electron affinity	50.6 kJ/mol	Conductivity, thermal	31 W/mK
		Weight	50.9415 u	Ionization, 1st	650.9 kJ/mol	Heat, specific	489 J/kgK
37 <b>Rb</b> Rubidium 85.468	2 8 18 6	Energy levels	2, 8, 11, 2	Radius, calculated	171 pm	Abundance, universe	0.000100 %
		Electronegativity	1.63	Hardness, Brinell	628 MPa	Discovered	1801 AD
38 <b>Sr</b> Strontium 87.62	2 8 18 6	Series	Transition metals	Melting point	1,910 °C	Modulus, bulk	160 GPa
		Write-up	<a href="#">Chromium</a> Wikipedia	Boiling point	2,671 °C	Density, STP	7,190 kg/m <sup>3</sup>
39 <b>Y</b> Yttrium 88.906	2 8 18 6	State at 0 °C	Solid	Electron affinity	64.3 kJ/mol	Conductivity, thermal	94 W/mK
		Weight	51.9961 u	Ionization, 1st	652.9 kJ/mol	Heat, specific	448 J/kgK
40 <b>Zr</b> Zirconium 91.224	2 8 18 6	Energy levels	2, 8, 13, 1	Radius, calculated	166 pm	Abundance, universe	0.0015 %
		Electronegativity	1.66	Hardness, Brinell	1,120 MPa	Discovered	1797 AD



25  
2  
8  
13  
2  
**Mn**  
Manganese  
54.938

Series	Transition metals
Write-up	<a href="#">Manganese</a> Wikipedia
State at 0 °C	Solid
Weight	54.938043 u
Energy levels	2, 8, 13, 2
Electronegativity	1.55

Melting point	1,246 °C
Boiling point	2,061 °C
Electron affinity	0 kJ/mol
Ionization, 1st	717.3 kJ/mol
Radius, calculated	161 pm
Hardness, Brinell	196 MPa

Modulus, bulk	120 GPa
Density, STP	7,470 kg/m <sup>3</sup>
Conductivity, thermal	7.8 W/mK
Heat, specific	479 J/kgK
Abundance, universe	0.00080 %
Discovered	1774 AD

26  
2  
8  
14  
2  
**Fe**  
Iron  
55.845

Series	Transition metals
Write-up	<a href="#">Iron</a> Wikipedia
State at 0 °C	Solid
Weight	55.845 u
Energy levels	2, 8, 14, 2
Electronegativity	1.83

Melting point	1,538 °C
Boiling point	2,861 °C
Electron affinity	15.7 kJ/mol
Ionization, 1st	762.5 kJ/mol
Radius, calculated	156 pm
Hardness, Brinell	490 MPa

Modulus, bulk	170 GPa
Density, STP	7,874 kg/m <sup>3</sup>
Conductivity, thermal	80 W/mK
Heat, specific	449 J/kgK
Abundance, universe	0.11 %
Discovered	2000 BC

27  
2  
8  
15  
2  
**Co**  
Cobalt  
58.933

Series	Transition metals
Write-up	<a href="#">Cobalt</a> Wikipedia
State at 0 °C	Solid
Weight	58.933194 u
Energy levels	2, 8, 15, 2
Electronegativity	1.88

Melting point	1,495 °C
Boiling point	2,900 °C
Electron affinity	63.7 kJ/mol
Ionization, 1st	760.4 kJ/mol
Radius, calculated	152 pm
Hardness, Brinell	700 MPa

Modulus, bulk	180 GPa
Density, STP	8,900 kg/m <sup>3</sup>
Conductivity, thermal	100 W/mK
Heat, specific	421 J/kgK
Abundance, universe	0.00030 %
Discovered	1735 AD

28  
2  
8  
16  
2  
**Ni**  
Nickel  
58.693

Series	Transition metals
Write-up	<a href="#">Nickel</a> Wikipedia
State at 0 °C	Solid
Weight	58.6934 u
Energy levels	2, 8, 16, 2
Electronegativity	1.91

Melting point	1,455 °C
Boiling point	2,913 °C
Electron affinity	112 kJ/mol
Ionization, 1st	737.1 kJ/mol
Radius, calculated	149 pm
Hardness, Brinell	700 MPa

Modulus, bulk	180 GPa
Density, STP	8,908 kg/m <sup>3</sup>
Conductivity, thermal	91 W/mK
Heat, specific	445 J/kgK
Abundance, universe	0.0060 %
Discovered	1751 AD

29  
2  
8  
18  
1  
**Cu**  
Copper  
63.546

Series	Transition metals
Write-up	<a href="#">Copper</a> Wikipedia
State at 0 °C	Solid
Weight	63.546 u
Energy levels	2, 8, 18, 1
Electronegativity	1.90

Melting point	1,084.62 °C
Boiling point	2,562 °C
Electron affinity	118.4 kJ/mol
Ionization, 1st	745.5 kJ/mol
Radius, calculated	145 pm
Hardness, Brinell	874 MPa

Modulus, bulk	140 GPa
Density, STP	8,960 kg/m <sup>3</sup>
Conductivity, thermal	400 W/mK
Heat, specific	384.4 J/kgK
Abundance, universe	6.0E-6 %
Discovered	8000 BC

30  
2  
8  
18  
2  
**Zn**  
Zinc  
65.38

Series	Transition metals
Write-up	<a href="#">Zinc</a> Wikipedia
State at 0 °C	Solid
Weight	65.38 u
Energy levels	2, 8, 18, 2
Electronegativity	1.65

Melting point	419.53 °C
Boiling point	906.9 °C
Electron affinity	0 kJ/mol
Ionization, 1st	906.4 kJ/mol
Radius, calculated	142 pm
Hardness, Brinell	412 MPa

Modulus, bulk	70 GPa
Density, STP	7,140 kg/m <sup>3</sup>
Conductivity, thermal	120 W/mK
Heat, specific	388 J/kgK
Abundance, universe	0.000030 %
Discovered	1500 AD

31  
2  
8  
18  
3  
**Ga**  
Gallium  
69.723

Series	Post-transition metals
Write-up	<a href="#">Gallium</a> Wikipedia
State at 0 °C	Solid
Weight	69.723 u
Energy levels	2, 8, 18, 3
Electronegativity	1.81

Melting point	29,760 °C
Boiling point	2,204 °C
Electron affinity	28.9 kJ/mol
Ionization, 1st	578.8 kJ/mol
Radius, calculated	136 pm
Hardness, Brinell	60 MPa

Modulus, bulk	N/A GPa
Density, STP	5,904 kg/m <sup>3</sup>
Conductivity, thermal	29 W/mK
Heat, specific	371 J/kgK
Abundance, universe	1.00E-6 %
Discovered	1875 AD

32  
2  
8  
18  
4  
**Ge**  
Germanium  
72.630

Series	Metalloids
Write-up	<a href="#">Germanium</a> Wikipedia
State at 0 °C	Solid
Weight	72.63 u
Energy levels	2, 8, 18, 4
Electronegativity	2.01

Melting point	938.25 °C
Boiling point	2,820 °C
Electron affinity	119 kJ/mol
Ionization, 1st	762 kJ/mol
Radius, calculated	125 pm
Hardness, Brinell	N/A MPa

Modulus, bulk	N/A GPa
Density, STP	5,323 kg/m <sup>3</sup>
Conductivity, thermal	60 W/mK
Heat, specific	321.4 J/kgK
Abundance, universe	0.000020 %
Discovered	1886 AD

33  
As  
Arsenic  
74.922

2  
8  
18  
5

Series	Metalloids	
Write-up	<a href="#">Arsenic</a> Wikipedia	
State at 0 °C	Solid	
Weight	74.921595 u	
Energy levels	2, 8, 18, 5	
Electronegativity	2.18	

Melting point	816.9 °C
Boiling point	614 °C
Electron affinity	78 kJ/mol
Ionization, 1st	947.0 kJ/mol
Radius, calculated	114 pm
Hardness, Brinell	1,440 MPa

Modulus, bulk	22 GPa
Density, STP	5,727 kg/m <sup>3</sup>
Conductivity, thermal	50 W/mK
Heat, specific	328 J/kgK
Abundance, universe	8.0E-7 %
Discovered	1250 AD

34  
Se  
Selenium  
78.971

2  
8  
18  
6

Series	Reactive nonmetals	
Write-up	<a href="#">Selenium</a> Wikipedia	
State at 0 °C	Solid	
Weight	78.971 u	
Energy levels	2, 8, 18, 6	
Electronegativity	2.55	

Melting point	221 °C
Boiling point	685 °C
Electron affinity	195 kJ/mol
Ionization, 1st	941.0 kJ/mol
Radius, calculated	103 pm
Hardness, Brinell	736 MPa

Modulus, bulk	8.3 GPa
Density, STP	4,819 kg/m <sup>3</sup>
Conductivity, thermal	0.52 W/mK
Heat, specific	321.2 J/kgK
Abundance, universe	3.0E-6 %
Discovered	1817 AD

35  
Br  
Bromine  
79.904

2  
8  
18  
7

Series	Reactive nonmetals	
Write-up	<a href="#">Bromine</a> Wikipedia	
State at 0 °C	Liquid	
Weight	79.904 u	
Energy levels	2, 8, 18, 7	
Electronegativity	2.96	

Melting point	-7.350 °C
Boiling point	58.9 °C
Electron affinity	324.6 kJ/mol
Ionization, 1st	1,139.9 kJ/mol
Radius, calculated	94 pm
Hardness, Brinell	N/A MPa

Modulus, bulk	1.9 GPa
Density, STP	3,120 kg/m <sup>3</sup>
Conductivity, thermal	0.12 W/mK
Heat, specific	947.3 J/kgK
Abundance, universe	7.0E-7 %
Discovered	1826 AD

36  
Kr  
Krypton  
83.798

2  
8  
18  
8

Series	Noble gases	
Write-up	<a href="#">Krypton</a> Wikipedia	
State at 0 °C	Gas	
Weight	83.798 u	
Energy levels	2, 8, 18, 8	
Electronegativity	3.0	

Melting point	-157.36 °C
Boiling point	-153.22 °C
Electron affinity	0 kJ/mol
Ionization, 1st	1,350.8 kJ/mol
Radius, calculated	88 pm
Hardness, Brinell	N/A MPa

Modulus, bulk	N/A GPa
Density, STP	3.75 kg/m <sup>3</sup>
Conductivity, thermal	0.00943 W/mK
Heat, specific	248.05 J/kgK
Abundance, universe	4.0E-6 %
Discovered	1898 AD

37  
Rb  
Rubidium  
85.468

2  
8  
18  
8  
1

Series	Alkali metals	
Write-up	<a href="#">Rubidium</a> Wikipedia	
State at 0 °C	Solid	
Weight	85.4678 u	
Energy levels	2, 8, 18, 8, 1	
Electronegativity	0.82	

Melting point	39.310 °C
Boiling point	688 °C
Electron affinity	46.9 kJ/mol
Ionization, 1st	403.0 kJ/mol
Radius, calculated	265 pm
Hardness, Brinell	0.216 MPa

Modulus, bulk	2.5 GPa
Density, STP	1,532 kg/m <sup>3</sup>
Conductivity, thermal	58 W/mK
Heat, specific	364 J/kgK
Abundance, universe	1.00E-6 %
Discovered	1861 AD

38  
Sr  
Strontium  
87.62

2  
8  
18  
8  
2

Series	Alkaline earth metals	
Write-up	<a href="#">Strontium</a> Wikipedia	
State at 0 °C	Solid	
Weight	87.62 u	
Energy levels	2, 8, 18, 8, 2	
Electronegativity	0.95	

Melting point	776.9 °C
Boiling point	1,382 °C
Electron affinity	5.03 kJ/mol
Ionization, 1st	549.5 kJ/mol
Radius, calculated	219 pm
Hardness, Brinell	N/A MPa

Modulus, bulk	N/A GPa
Density, STP	2,630 kg/m <sup>3</sup>
Conductivity, thermal	35 W/mK
Heat, specific	300 J/kgK
Abundance, universe	4.0E-6 %
Discovered	1790 AD

39  
Y  
Yttrium  
88.906

2  
8  
18  
9  
2

Series	Transition metals	
Write-up	<a href="#">Yttrium</a> Wikipedia	
State at 0 °C	Solid	
Weight	88.905838 u	
Energy levels	2, 8, 18, 9, 2	
Electronegativity	1.22	

Melting point	1,526 °C
Boiling point	3,345 °C
Electron affinity	29.6 kJ/mol
Ionization, 1st	600 kJ/mol
Radius, calculated	212 pm
Hardness, Brinell	589 MPa

Modulus, bulk	41 GPa
Density, STP	4,472 kg/m <sup>3</sup>
Conductivity, thermal	17 W/mK
Heat, specific	298 J/kgK
Abundance, universe	7.0E-7 %
Discovered	1794 AD

40  
Zr  
Zirconium  
91.224

2  
8  
18  
10  
2

Series	Transition metals	
Write-up	<a href="#">Zirconium</a> Wikipedia	
State at 0 °C	Solid	
Weight	91.224 u	
Energy levels	2, 8, 18, 10, 2	
Electronegativity	1.33	

Melting point	1,855 °C
Boiling point	4,409 °C
Electron affinity	41.1 kJ/mol
Ionization, 1st	640.1 kJ/mol
Radius, calculated	206 pm
Hardness, Brinell	650 MPa

Modulus, bulk	N/A GPa
Density, STP	6,511 kg/m <sup>3</sup>
Conductivity, thermal	23 W/mK
Heat, specific	278 J/kgK
Abundance, universe	5.0E-6 %
Discovered	1789 AD

<b>41</b> <b>Nb</b> Niobium 92.906	2	Series	Transition metals	Melting point	2,477 °C	Modulus, bulk	170 GPa
	8	Write-up	<a href="#">Niobium</a> Wikipedia	Boiling point	4,744 °C	Density, STP	8,570 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	86.1 kJ/mol	Conductivity, thermal	54 W/mK
	12	Weight	92.90637 u	Ionization, 1st	652.1 kJ/mol	Heat, specific	265 J/kgK
	1	Energy levels	2, 8, 18, 12, 1	Radius, calculated	198 pm	Abundance, universe	2.0E-7 %
		Electronegativity	1.6	Hardness, Brinell	736 MPa	Discovered	1801 AD
<b>42</b> <b>Mo</b> Molybdenum 95.95	2	Series	Transition metals	Melting point	2,623 °C	Modulus, bulk	230 GPa
	8	Write-up	<a href="#">Molybdenum</a> Wikipedia	Boiling point	4,639 °C	Density, STP	10,280 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	71.9 kJ/mol	Conductivity, thermal	139 W/mK
	13	Weight	95.95 u	Ionization, 1st	684.3 kJ/mol	Heat, specific	251 J/kgK
	1	Energy levels	2, 8, 18, 13, 1	Radius, calculated	190 pm	Abundance, universe	5.0E-7 %
		Electronegativity	2.16	Hardness, Brinell	1,500 MPa	Discovered	1781 AD
<b>43</b> <b>Tc</b> Technetium (98)	2	Series	Transition metals	Melting point	2,157 °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Technetium</a> Wikipedia	Boiling point	4,265 °C	Density, STP	11,500 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	53 kJ/mol	Conductivity, thermal	51 W/mK
	13	Weight	98 u	Ionization, 1st	702 kJ/mol	Heat, specific	63 J/kgK
	2	Energy levels	2, 8, 18, 13, 2	Radius, calculated	183 pm	Abundance, universe	0 %
		Electronegativity	1.9	Hardness, Brinell	N/A MPa	Discovered	1937 AD
<b>44</b> <b>Ru</b> Ruthenium 101.07	2	Series	Transition metals	Melting point	2,334 °C	Modulus, bulk	220 GPa
	8	Write-up	<a href="#">Ruthenium</a> Wikipedia	Boiling point	4,150 °C	Density, STP	12,370 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	101.3 kJ/mol	Conductivity, thermal	120 W/mK
	15	Weight	101.07 u	Ionization, 1st	710.2 kJ/mol	Heat, specific	238 J/kgK
	1	Energy levels	2, 8, 18, 15, 1	Radius, calculated	178 pm	Abundance, universe	4.0E-7 %
		Electronegativity	2.2	Hardness, Brinell	2,160 MPa	Discovered	1844 AD
<b>45</b> <b>Rh</b> Rhodium 102.91	2	Series	Transition metals	Melting point	1,964 °C	Modulus, bulk	380 GPa
	8	Write-up	<a href="#">Rhodium</a> Wikipedia	Boiling point	3,695 °C	Density, STP	12,450 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	109.7 kJ/mol	Conductivity, thermal	150 W/mK
	16	Weight	102.90549 u	Ionization, 1st	719.7 kJ/mol	Heat, specific	240 J/kgK
	1	Energy levels	2, 8, 18, 16, 1	Radius, calculated	173 pm	Abundance, universe	6.0E-8 %
		Electronegativity	2.28	Hardness, Brinell	1,100 MPa	Discovered	1803 AD
<b>46</b> <b>Pd</b> Palladium 106.42	2	Series	Transition metals	Melting point	1,554.90 °C	Modulus, bulk	180 GPa
	8	Write-up	<a href="#">Palladium</a> Wikipedia	Boiling point	2,963 °C	Density, STP	12,023 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	53.7 kJ/mol	Conductivity, thermal	72 W/mK
	18	Weight	106.42 u	Ionization, 1st	804.4 kJ/mol	Heat, specific	240 J/kgK
		Energy levels	2, 8, 18, 18	Radius, calculated	169 pm	Abundance, universe	2.0E-7 %
		Electronegativity	2.20	Hardness, Brinell	37.3 MPa	Discovered	1803 AD
<b>47</b> <b>Ag</b> Silver 107.87	2	Series	Transition metals	Melting point	961.780 °C	Modulus, bulk	100 GPa
	8	Write-up	<a href="#">Silver</a> Wikipedia	Boiling point	2,162 °C	Density, STP	10,490 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	125.6 kJ/mol	Conductivity, thermal	430 W/mK
	18	Weight	107.8682 u	Ionization, 1st	731.0 kJ/mol	Heat, specific	235 J/kgK
	1	Energy levels	2, 8, 18, 18, 1	Radius, calculated	165 pm	Abundance, universe	6.0E-8 %
		Electronegativity	1.93	Hardness, Brinell	24.5 MPa	Discovered	3000 BC
<b>48</b> <b>Cd</b> Cadmium 112.41	2	Series	Transition metals	Melting point	321.07 °C	Modulus, bulk	42 GPa
	8	Write-up	<a href="#">Cadmium</a> Wikipedia	Boiling point	766.9 °C	Density, STP	8,650 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	0 kJ/mol	Conductivity, thermal	97 W/mK
	18	Weight	112.414 u	Ionization, 1st	867.8 kJ/mol	Heat, specific	230 J/kgK
	2	Energy levels	2, 8, 18, 18, 2	Radius, calculated	161 pm	Abundance, universe	2.0E-7 %
		Electronegativity	1.69	Hardness, Brinell	203 MPa	Discovered	1817 AD

<b>49</b> <b>In</b> Indium 114.82	2	Series Post-transition metals Write-up <a href="#">Indium</a> Wikipedia State at 0 °C Solid Weight 114.818 u Energy levels 2, 8, 18, 18, 3 Electronegativity 1.78	Melting point 156.60 °C	Modulus, bulk N/A GPa
	8		Boiling point 2,072 °C	Density, STP 7,310 kg/m <sup>3</sup>
	18		Electron affinity 28.9 kJ/mol	Conductivity, thermal 82 W/mK
	18		Ionization, 1st 558.3 kJ/mol	Heat, specific 233 J/kgK
	18		Radius, calculated 156 pm	Abundance, universe 3.0E-8 %
	3		Hardness, Brinell 8.83 MPa	Discovered 1863 AD
<b>50</b> <b>Sn</b> Tin 118.71	2	Series Post-transition metals Write-up <a href="#">Tin</a> Wikipedia State at 0 °C Solid Weight 118.710 u Energy levels 2, 8, 18, 18, 4 Electronegativity 1.96	Melting point 231.93 °C	Modulus, bulk 58 GPa
	8		Boiling point 2,602 °C	Density, STP 7,310 kg/m <sup>3</sup>
	18		Electron affinity 107.3 kJ/mol	Conductivity, thermal 67 W/mK
	18		Ionization, 1st 708.6 kJ/mol	Heat, specific 217 J/kgK
	18		Radius, calculated 145 pm	Abundance, universe 4.0E-7 %
	4		Hardness, Brinell 51 MPa	Discovered 3000 BC
<b>51</b> <b>Sb</b> Antimony 121.76	2	Series Metalloids Write-up <a href="#">Antimony</a> Wikipedia State at 0 °C Solid Weight 121.760 u Energy levels 2, 8, 18, 18, 5 Electronegativity 2.05	Melting point 630.63 °C	Modulus, bulk 42 GPa
	8		Boiling point 1,587 °C	Density, STP 6,697 kg/m <sup>3</sup>
	18		Electron affinity 103.2 kJ/mol	Conductivity, thermal 24 W/mK
	18		Ionization, 1st 834 kJ/mol	Heat, specific 207 J/kgK
	18		Radius, calculated 133 pm	Abundance, universe 4.0E-8 %
	5		Hardness, Brinell 294 MPa	Discovered 3000 BC
<b>52</b> <b>Te</b> Tellurium 127.60	2	Series Metalloids Write-up <a href="#">Tellurium</a> Wikipedia State at 0 °C Solid Weight 127.60 u Energy levels 2, 8, 18, 18, 6 Electronegativity 2.1	Melting point 449.51 °C	Modulus, bulk 65 GPa
	8		Boiling point 987.9 °C	Density, STP 6,240 kg/m <sup>3</sup>
	18		Electron affinity 190.2 kJ/mol	Conductivity, thermal 3 W/mK
	18		Ionization, 1st 869.3 kJ/mol	Heat, specific 201 J/kgK
	18		Radius, calculated 123 pm	Abundance, universe 9.0E-7 %
	6		Hardness, Brinell 180 MPa	Discovered 1783 AD
<b>53</b> <b>I</b> Iodine 126.90	2	Series Reactive nonmetals Write-up <a href="#">Iodine</a> Wikipedia State at 0 °C Solid Weight 126.90447 u Energy levels 2, 8, 18, 18, 7 Electronegativity 2.66	Melting point 113.70 °C	Modulus, bulk 7.7 GPa
	8		Boiling point 184.3 °C	Density, STP 4,940 kg/m <sup>3</sup>
	18		Electron affinity 295.2 kJ/mol	Conductivity, thermal 0.449 W/mK
	18		Ionization, 1st 1,008.4 kJ/mol	Heat, specific 429.0 J/kgK
	18		Radius, calculated 115 pm	Abundance, universe 1.00E-7 %
	7		Hardness, Brinell N/A MPa	Discovered 1811 AD
<b>54</b> <b>Xe</b> Xenon 131.29	2	Series Noble gases Write-up <a href="#">Xenon</a> Wikipedia State at 0 °C Gas Weight 131.293 u Energy levels 2, 8, 18, 18, 8 Electronegativity 2.6	Melting point -111.8 °C	Modulus, bulk N/A GPa
	8		Boiling point -108.0 °C	Density, STP 5.9 kg/m <sup>3</sup>
	18		Electron affinity 0 kJ/mol	Conductivity, thermal 0.00565 W/mK
	18		Ionization, 1st 1,170.4 kJ/mol	Heat, specific 158.32 J/kgK
	18		Radius, calculated 108 pm	Abundance, universe 1.00E-6 %
	8		Hardness, Brinell N/A MPa	Discovered 1898 AD
<b>55</b> <b>Cs</b> Caesium 132.91	2	Series Alkali metals Write-up <a href="#">Caesium</a> Wikipedia State at 0 °C Solid Weight 132.90545196 u Energy levels 2, 8, 18, 18, 8, 1 Electronegativity 0.79	Melting point 28.440 °C	Modulus, bulk 1.6 GPa
	8		Boiling point 671 °C	Density, STP 1,879 kg/m <sup>3</sup>
	18		Electron affinity 45.5 kJ/mol	Conductivity, thermal 36 W/mK
	18		Ionization, 1st 375.7 kJ/mol	Heat, specific 242 J/kgK
	8		Radius, calculated 298 pm	Abundance, universe 8.0E-8 %
	1		Hardness, Brinell 0.14 MPa	Discovered 1860 AD
<b>56</b> <b>Ba</b> Barium 137.33	2	Series Alkaline earth metals Write-up <a href="#">Barium</a> Wikipedia State at 0 °C Solid Weight 137.327 u Energy levels 2, 8, 18, 18, 8, 2 Electronegativity 0.89	Melting point 730 °C	Modulus, bulk 9.6 GPa
	8		Boiling point 1,870 °C	Density, STP 3,510 kg/m <sup>3</sup>
	18		Electron affinity 13.95 kJ/mol	Conductivity, thermal 18 W/mK
	18		Ionization, 1st 502.9 kJ/mol	Heat, specific 205 J/kgK
	8		Radius, calculated 253 pm	Abundance, universe 1.00E-6 %
	2		Hardness, Brinell N/A MPa	Discovered 1808 AD

<b>57</b> <b>La</b> Lanthanum 138.91	2	Series	Lanthanoids	Melting point	919.9 °C	Modulus, bulk	28 GPa	
	8	Write-up	<a href="#">Lanthanum</a> Wikipedia	Boiling point	3,464 °C	Density, STP	6,146 kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	48 kJ/mol	Conductivity, thermal	13 W/mK
	18	Weight	138.90547 u	Ionization, 1st	538.1 kJ/mol	Heat, specific	195 J/kgK	
	9	Energy levels	2, 8, 18, 18, 9, 2	Radius, calculated	N/A pm	Abundance, universe	2.0E-7 %	
	2	Electronegativity	1.10	Hardness, Brinell	363 MPa	Discovered	1839 AD	
<b>58</b> <b>Ce</b> Cerium 140.12	2	Series	Lanthanoids	Melting point	797.9 °C	Modulus, bulk	22 GPa	
	8	Write-up	<a href="#">Cerium</a> Wikipedia	Boiling point	3,360 °C	Density, STP	6,689 kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	50 kJ/mol	Conductivity, thermal	11 W/mK
	19	Weight	140.116 u	Ionization, 1st	534.4 kJ/mol	Heat, specific	192 J/kgK	
	9	Energy levels	2, 8, 18, 19, 9, 2	Radius, calculated	N/A pm	Abundance, universe	1.00E-6 %	
	2	Electronegativity	1.12	Hardness, Brinell	412 MPa	Discovered	1803 AD	
<b>59</b> <b>Pr</b> Praseodymium 140.91	2	Series	Lanthanoids	Melting point	930.9 °C	Modulus, bulk	29 GPa	
	8	Write-up	<a href="#">Praseodymium</a> Wikipedia	Boiling point	3,290 °C	Density, STP	6,640 kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	50 kJ/mol	Conductivity, thermal	13 W/mK
	21	Weight	140.90766 u	Ionization, 1st	527 kJ/mol	Heat, specific	193 J/kgK	
	8	Energy levels	2, 8, 18, 21, 8, 2	Radius, calculated	247 pm	Abundance, universe	2.0E-7 %	
	2	Electronegativity	1.13	Hardness, Brinell	481 MPa	Discovered	1885 AD	
<b>60</b> <b>Nd</b> Neodymium 144.24	2	Series	Lanthanoids	Melting point	1,021 °C	Modulus, bulk	32 GPa	
	8	Write-up	<a href="#">Neodymium</a> Wikipedia	Boiling point	3,100 °C	Density, STP	7,010 kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	50 kJ/mol	Conductivity, thermal	17 W/mK
	22	Weight	144.242 u	Ionization, 1st	533.1 kJ/mol	Heat, specific	190 J/kgK	
	8	Energy levels	2, 8, 18, 22, 8, 2	Radius, calculated	206 pm	Abundance, universe	1.00E-6 %	
	2	Electronegativity	1.14	Hardness, Brinell	265 MPa	Discovered	1885 AD	
<b>61</b> <b>Pm</b> Promethium (145)	2	Series	Lanthanoids	Melting point	1,100 °C	Modulus, bulk	33 GPa	
	8	Write-up	<a href="#">Promethium</a> Wikipedia	Boiling point	3,000 °C	Density, STP	7,264 kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	50 kJ/mol	Conductivity, thermal	15 W/mK
	23	Weight	145 u	Ionization, 1st	540 kJ/mol	Heat, specific	N/A J/kgK	
	8	Energy levels	2, 8, 18, 23, 8, 2	Radius, calculated	205 pm	Abundance, universe	0 %	
	2	Electronegativity	N/A	Hardness, Brinell	N/A MPa	Discovered	1945 AD	
<b>62</b> <b>Sm</b> Samarium 150.36	2	Series	Lanthanoids	Melting point	1,072 °C	Modulus, bulk	38 GPa	
	8	Write-up	<a href="#">Samarium</a> Wikipedia	Boiling point	1,803 °C	Density, STP	7,353 kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	50 kJ/mol	Conductivity, thermal	13 W/mK
	24	Weight	150.36 u	Ionization, 1st	544.5 kJ/mol	Heat, specific	196 J/kgK	
	8	Energy levels	2, 8, 18, 24, 8, 2	Radius, calculated	238 pm	Abundance, universe	5.0E-7 %	
	2	Electronegativity	1.17	Hardness, Brinell	441 MPa	Discovered	1879 AD	
<b>63</b> <b>Eu</b> Europium 151.96	2	Series	Lanthanoids	Melting point	821.9 °C	Modulus, bulk	8.3 GPa	
	8	Write-up	<a href="#">Europium</a> Wikipedia	Boiling point	1,500 °C	Density, STP	5,244 kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	50 kJ/mol	Conductivity, thermal	14 W/mK
	25	Weight	151.964 u	Ionization, 1st	547.1 kJ/mol	Heat, specific	182 J/kgK	
	8	Energy levels	2, 8, 18, 25, 8, 2	Radius, calculated	231 pm	Abundance, universe	5.0E-8 %	
	2	Electronegativity	N/A	Hardness, Brinell	N/A MPa	Discovered	1901 AD	
<b>64</b> <b>Gd</b> Gadolinium 157.25	2	Series	Lanthanoids	Melting point	1,313 °C	Modulus, bulk	38 GPa	
	8	Write-up	<a href="#">Gadolinium</a> Wikipedia	Boiling point	3,250 °C	Density, STP	7,901 kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	50 kJ/mol	Conductivity, thermal	11 W/mK
	25	Weight	157.25 u	Ionization, 1st	593.4 kJ/mol	Heat, specific	240 J/kgK	
	9	Energy levels	2, 8, 18, 25, 9, 2	Radius, calculated	233 pm	Abundance, universe	2.0E-7 %	
	2	Electronegativity	1.20	Hardness, Brinell	N/A MPa	Discovered	1880 AD	

65 <b>Tb</b> Terbium 158.93	2	Series Lanthanoids	Write-up <a href="#">Terbium</a> Wikipedia	Melting point	1,356 °C	Modulus, bulk	38.7 GPa
	8			Boiling point	3,230 °C	Density, STP	8,219 kg/m <sup>3</sup>
66 <b>Dy</b> Dysprosium 162.50	18	Series Lanthanoids	Write-up <a href="#">Dysprosium</a> Wikipedia	Electron affinity	50 kJ/mol	Conductivity, thermal	11 W/mK
	27			Ionization, 1st	565.8 kJ/mol	Heat, specific	182 J/kgK
67 <b>Ho</b> Holmium 164.93	8	Series Lanthanoids	Write-up <a href="#">Holmium</a> Wikipedia	Radius, calculated	225 pm	Abundance, universe	5.0E-8 %
	2			Hardness, Brinell	677 MPa	Discovered	1843 AD
68 <b>Er</b> Erbium 167.26	2	Series Lanthanoids	Write-up <a href="#">Erbium</a> Wikipedia	Melting point	1,412 °C	Modulus, bulk	41 GPa
	8			Boiling point	2,567 °C	Density, STP	8,551 kg/m <sup>3</sup>
69 <b>Tm</b> Thulium 168.93	18	Series Lanthanoids	Write-up <a href="#">Thulium</a> Wikipedia	Electron affinity	50 kJ/mol	Conductivity, thermal	11 W/mK
	28			Ionization, 1st	573.0 kJ/mol	Heat, specific	167 J/kgK
70 <b>Yb</b> Ytterbium 173.05	8	Series Lanthanoids	Write-up <a href="#">Ytterbium</a> Wikipedia	Radius, calculated	228 pm	Abundance, universe	2.0E-7 %
	2			Hardness, Brinell	500 MPa	Discovered	1886 AD
71 <b>Lu</b> Lutetium 174.97	29	Series Lanthanoids	Write-up <a href="#">Lutetium</a> Wikipedia	Melting point	1,474 °C	Modulus, bulk	40 GPa
	8			Boiling point	2,700 °C	Density, STP	8,795 kg/m <sup>3</sup>
72 <b>Hf</b> Hafnium 178.49	2	Series Transition metals	Write-up <a href="#">Hafnium</a> Wikipedia	Electron affinity	50 kJ/mol	Conductivity, thermal	16 W/mK
	8			Ionization, 1st	581.0 kJ/mol	Heat, specific	165 J/kgK
	2			Radius, calculated	226 pm	Abundance, universe	5.0E-8 %
	2			Hardness, Brinell	746 MPa	Discovered	1878 AD
	2			Melting point	1,497 °C	Modulus, bulk	44 GPa
	2			Boiling point	2,868 °C	Density, STP	9,066 kg/m <sup>3</sup>
	2			Electron affinity	50 kJ/mol	Conductivity, thermal	15 W/mK
	2			Ionization, 1st	589.3 kJ/mol	Heat, specific	168 J/kgK
	2			Radius, calculated	226 pm	Abundance, universe	2.0E-7 %
	2			Hardness, Brinell	814 MPa	Discovered	1842 AD
	2			Melting point	1,545 °C	Modulus, bulk	45 GPa
	2			Boiling point	1,950 °C	Density, STP	9,320 kg/m <sup>3</sup>
	2			Electron affinity	50 kJ/mol	Conductivity, thermal	17 W/mK
	2			Ionization, 1st	596.7 kJ/mol	Heat, specific	160 J/kgK
	2			Radius, calculated	222 pm	Abundance, universe	1.00E-8 %
	2			Hardness, Brinell	471 MPa	Discovered	1879 AD
	2			Melting point	818.9 °C	Modulus, bulk	31 GPa
	2			Boiling point	1,196 °C	Density, STP	6,570 kg/m <sup>3</sup>
	2			Electron affinity	50 kJ/mol	Conductivity, thermal	39 W/mK
	2			Ionization, 1st	603.4 kJ/mol	Heat, specific	154 J/kgK
	2			Radius, calculated	222 pm	Abundance, universe	2.0E-7 %
	2			Hardness, Brinell	343 MPa	Discovered	1878 AD
	2			Melting point	1,663 °C	Modulus, bulk	48 GPa
	2			Boiling point	3,402 °C	Density, STP	9,841 kg/m <sup>3</sup>
	2			Electron affinity	50 kJ/mol	Conductivity, thermal	16 W/mK
	2			Ionization, 1st	523.5 kJ/mol	Heat, specific	154 J/kgK
	2			Radius, calculated	217 pm	Abundance, universe	1.00E-8 %
	2			Hardness, Brinell	893 MPa	Discovered	1907 AD
	2			Melting point	2,233 °C	Modulus, bulk	110 GPa
	2			Boiling point	4,603 °C	Density, STP	13,310 kg/m <sup>3</sup>
	2			Electron affinity	0 kJ/mol	Conductivity, thermal	23 W/mK
	2			Ionization, 1st	658.5 kJ/mol	Heat, specific	144 J/kgK
	2			Radius, calculated	208 pm	Abundance, universe	7.0E-8 %
	2			Hardness, Brinell	1,700 MPa	Discovered	1923 AD

<b>73</b> <b>Ta</b> Tantalum 180.95	2	Series	Transition metals	Melting point	3,017 °C	Modulus, bulk	200 GPa
	8	Write-up	<a href="#">Tantalum</a> Wikipedia	Boiling point	5,458 °C	Density, STP	16,650 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	31 kJ/mol	Conductivity, thermal	57 W/mK
	32	Weight	180.94788 u	Ionization, 1st	761 kJ/mol	Heat, specific	140 J/kgK
	11	Energy levels	2, 8, 18, 32, 11, 2	Radius, calculated	200 pm	Abundance, universe	8.0E-9 %
2	Electronegativity	1.5	Hardness, Brinell	800 MPa	Discovered	1802 AD	
<b>74</b> <b>W</b> Tungsten 183.84	2	Series	Transition metals	Melting point	3,422 °C	Modulus, bulk	310 GPa
	8	Write-up	<a href="#">Tungsten</a> Wikipedia	Boiling point	5,555 °C	Density, STP	19,250 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	78.6 kJ/mol	Conductivity, thermal	170 W/mK
	32	Weight	183.84 u	Ionization, 1st	770 kJ/mol	Heat, specific	132 J/kgK
	12	Energy levels	2, 8, 18, 32, 12, 2	Radius, calculated	193 pm	Abundance, universe	5.0E-8 %
2	Electronegativity	2.36	Hardness, Brinell	2,570 MPa	Discovered	1783 AD	
<b>75</b> <b>Re</b> Rhenium 186.21	2	Series	Transition metals	Melting point	3,186 °C	Modulus, bulk	370 GPa
	8	Write-up	<a href="#">Rhenium</a> Wikipedia	Boiling point	5,596 °C	Density, STP	21,020 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	14.5 kJ/mol	Conductivity, thermal	48 W/mK
	32	Weight	186.207 u	Ionization, 1st	760 kJ/mol	Heat, specific	137 J/kgK
	13	Energy levels	2, 8, 18, 32, 13, 2	Radius, calculated	188 pm	Abundance, universe	2.0E-8 %
2	Electronegativity	1.9	Hardness, Brinell	1,320 MPa	Discovered	1925 AD	
<b>76</b> <b>Os</b> Osmium 190.23	2	Series	Transition metals	Melting point	3,033 °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Osmium</a> Wikipedia	Boiling point	5,012 °C	Density, STP	22,590 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	106.1 kJ/mol	Conductivity, thermal	88 W/mK
	32	Weight	190.23 u	Ionization, 1st	840 kJ/mol	Heat, specific	130 J/kgK
	14	Energy levels	2, 8, 18, 32, 14, 2	Radius, calculated	185 pm	Abundance, universe	3.0E-7 %
2	Electronegativity	2.2	Hardness, Brinell	3,920 MPa	Discovered	1803 AD	
<b>77</b> <b>Ir</b> Iridium 192.22	2	Series	Transition metals	Melting point	2,466 °C	Modulus, bulk	320 GPa
	8	Write-up	<a href="#">Iridium</a> Wikipedia	Boiling point	4,428 °C	Density, STP	22,560 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	151 kJ/mol	Conductivity, thermal	150 W/mK
	32	Weight	192.217 u	Ionization, 1st	880 kJ/mol	Heat, specific	131 J/kgK
	15	Energy levels	2, 8, 18, 32, 15, 2	Radius, calculated	180 pm	Abundance, universe	2.0E-7 %
2	Electronegativity	2.20	Hardness, Brinell	1,670 MPa	Discovered	1803 AD	
<b>78</b> <b>Pt</b> Platinum 195.08	2	Series	Transition metals	Melting point	1,768.3 °C	Modulus, bulk	230 GPa
	8	Write-up	<a href="#">Platinum</a> Wikipedia	Boiling point	3,825 °C	Density, STP	21,450 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	205.3 kJ/mol	Conductivity, thermal	72 W/mK
	32	Weight	195.084 u	Ionization, 1st	870 kJ/mol	Heat, specific	133 J/kgK
	17	Energy levels	2, 8, 18, 32, 17, 1	Radius, calculated	177 pm	Abundance, universe	5.0E-7 %
1	Electronegativity	2.28	Hardness, Brinell	392 MPa	Discovered	1735 AD	
<b>79</b> <b>Au</b> Gold 196.97	2	Series	Transition metals	Melting point	1,064.18 °C	Modulus, bulk	220 GPa
	8	Write-up	<a href="#">Gold</a> Wikipedia	Boiling point	2,856 °C	Density, STP	19,300 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	222.8 kJ/mol	Conductivity, thermal	320 W/mK
	32	Weight	196.966570 u	Ionization, 1st	890.1 kJ/mol	Heat, specific	129.1 J/kgK
	18	Energy levels	2, 8, 18, 32, 18, 1	Radius, calculated	174 pm	Abundance, universe	6.0E-8 %
1	Electronegativity	2.54	Hardness, Brinell	25 MPa	Discovered	2500 BC	
<b>80</b> <b>Hg</b> Mercury 200.59	2	Series	Transition metals	Melting point	-38.830 °C	Modulus, bulk	25 GPa
	8	Write-up	<a href="#">Mercury</a> Wikipedia	Boiling point	356.73 °C	Density, STP	13,534 kg/m <sup>3</sup>
	18	State at 0 °C	Liquid	Electron affinity	0 kJ/mol	Conductivity, thermal	8.3 W/mK
	32	Weight	200.59 u	Ionization, 1st	1,007.1 kJ/mol	Heat, specific	139.5 J/kgK
	18	Energy levels	2, 8, 18, 32, 18, 2	Radius, calculated	171 pm	Abundance, universe	1.00E-7 %
2	Electronegativity	2.0	Hardness, Brinell	N/A MPa	Discovered	1500 BC	

<b>81</b> <b>Tl</b> Thallium 204.38	2	Series	Post-transition metals	Melting point	304 °C	Modulus, bulk	43 GPa
	8	Write-up	<a href="#">Thallium</a> Wikipedia	Boiling point	1,473 °C	Density, STP	11,850 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	19.2 kJ/mol	Conductivity, thermal	46 W/mK
	32	Weight	204.38	Ionization, 1st	589.4 kJ/mol	Heat, specific	129 J/kgK
	18	Energy levels	2, 8, 18, 32, 18, 3	Radius, calculated	156 pm	Abundance, universe	5.0E-8 %
	3	Electronegativity	1.62	Hardness, Brinell	26.4 MPa	Discovered	1861 AD
<b>82</b> <b>Pb</b> Lead 207.2	2	Series	Post-transition metals	Melting point	327.46 °C	Modulus, bulk	46 GPa
	8	Write-up	<a href="#">Lead</a> Wikipedia	Boiling point	1,749 °C	Density, STP	11,340 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	35.1 kJ/mol	Conductivity, thermal	35 W/mK
	32	Weight	207.2	Ionization, 1st	715.6 kJ/mol	Heat, specific	127 J/kgK
	18	Energy levels	2, 8, 18, 32, 18, 4	Radius, calculated	154 pm	Abundance, universe	1.00E-6 %
	4	Electronegativity	2.33	Hardness, Brinell	38.3 MPa	Discovered	4000 BC
<b>83</b> <b>Bi</b> Bismuth 208.98	2	Series	Post-transition metals	Melting point	271.3 °C	Modulus, bulk	31 GPa
	8	Write-up	<a href="#">Bismuth</a> Wikipedia	Boiling point	1,564 °C	Density, STP	9,780 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	91.2 kJ/mol	Conductivity, thermal	8 W/mK
	32	Weight	208.98040	Ionization, 1st	703 kJ/mol	Heat, specific	122 J/kgK
	18	Energy levels	2, 8, 18, 32, 18, 5	Radius, calculated	143 pm	Abundance, universe	7.0E-8 %
	5	Electronegativity	2.02	Hardness, Brinell	94.2 MPa	Discovered	1400 AD
<b>84</b> <b>Po</b> Polonium (209)	2	Series	Post-transition metals	Melting point	255 °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Polonium</a> Wikipedia	Boiling point	961.9 °C	Density, STP	9,196 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	183.3 kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	209	Ionization, 1st	812.1 kJ/mol	Heat, specific	N/A J/kgK
	18	Energy levels	2, 8, 18, 32, 18, 6	Radius, calculated	135 pm	Abundance, universe	0 %
	6	Electronegativity	2.0	Hardness, Brinell	N/A MPa	Discovered	1898 AD
<b>85</b> <b>At</b> Astatine (210)	2	Series	Metalloids	Melting point	302 °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Astatine</a> Wikipedia	Boiling point	350 °C	Density, STP	N/A kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	270.1 kJ/mol	Conductivity, thermal	2 W/mK
	32	Weight	210	Ionization, 1st	890 kJ/mol	Heat, specific	N/A J/kgK
	18	Energy levels	2, 8, 18, 32, 18, 7	Radius, calculated	127 pm	Abundance, universe	0 %
	7	Electronegativity	2.2	Hardness, Brinell	N/A MPa	Discovered	1940 AD
<b>86</b> <b>Rn</b> Radon (222)	2	Series	Noble gases	Melting point	-71.1 °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Radon</a> Wikipedia	Boiling point	-61.85 °C	Density, STP	9.73 kg/m <sup>3</sup>
	18	State at 0 °C	Gas	Electron affinity	0 kJ/mol	Conductivity, thermal	0.00361 W/mK
	32	Weight	222	Ionization, 1st	1,037 kJ/mol	Heat, specific	93.65 J/kgK
	18	Energy levels	2, 8, 18, 32, 18, 8	Radius, calculated	120 pm	Abundance, universe	0 %
	8	Electronegativity	N/A	Hardness, Brinell	N/A MPa	Discovered	1900 AD
<b>87</b> <b>Fr</b> Francium (223)	2	Series	Alkali metals	Melting point	20.9 °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Francium</a> Wikipedia	Boiling point	650 °C	Density, STP	N/A kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	223	Ionization, 1st	380 kJ/mol	Heat, specific	N/A J/kgK
	18	Energy levels	2, 8, 18, 32, 18, 8, 1	Radius, calculated	N/A pm	Abundance, universe	0 %
	1	Electronegativity	0.7	Hardness, Brinell	N/A MPa	Discovered	1939 AD
<b>88</b> <b>Ra</b> Radium (226)	2	Series	Alkaline earth metals	Melting point	700 °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Radium</a> Wikipedia	Boiling point	1,737 °C	Density, STP	5,000 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	19 W/mK
	32	Weight	226	Ionization, 1st	509.3 kJ/mol	Heat, specific	92.0 J/kgK
	18	Energy levels	2, 8, 18, 32, 18, 8, 2	Radius, calculated	N/A pm	Abundance, universe	0 %
	2	Electronegativity	0.9	Hardness, Brinell	N/A MPa	Discovered	1898 AD



<b>89</b> <b>Ac</b> Actinium (227)	2	Series	Actinoids	Melting point	1,050 °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Actinium</a> Wikipedia	Boiling point	3,200 °C	Density, STP	10,070 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	12 W/mK
	32	Weight	227 u	Ionization, 1st	499 kJ/mol	Heat, specific	120 J/kgK
	18	Energy levels	2, 8, 18, 32, 18, 9, 2	Radius, calculated	N/A pm	Abundance, universe	0 %
	9	Electronegativity	1.1	Hardness, Brinell	N/A MPa	Discovered	1899 AD
<b>90</b> <b>Th</b> Thorium 232.04	2	Series	Actinoids	Melting point	1,750 °C	Modulus, bulk	54 GPa
	8	Write-up	<a href="#">Thorium</a> Wikipedia	Boiling point	4,820 °C	Density, STP	11,724 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	54 W/mK
	32	Weight	232.0377 u	Ionization, 1st	587 kJ/mol	Heat, specific	118 J/kgK
	18	Energy levels	2, 8, 18, 32, 18, 10, 2	Radius, calculated	N/A pm	Abundance, universe	4.0E-8 %
	10	Electronegativity	1.3	Hardness, Brinell	400 MPa	Discovered	1829 AD
<b>91</b> <b>Pa</b> Protactinium 231.04	2	Series	Actinoids	Melting point	1,572 °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Protactinium</a> Wikipedia	Boiling point	4,000 °C	Density, STP	15,370 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	47 W/mK
	32	Weight	231.03588 u	Ionization, 1st	568 kJ/mol	Heat, specific	99.1 J/kgK
	20	Energy levels	2, 8, 18, 32, 20, 9, 2	Radius, calculated	N/A pm	Abundance, universe	0 %
	9	Electronegativity	1.5	Hardness, Brinell	N/A MPa	Discovered	1913 AD
<b>92</b> <b>U</b> Uranium 238.03	2	Series	Actinoids	Melting point	1,135 °C	Modulus, bulk	100 GPa
	8	Write-up	<a href="#">Uranium</a> Wikipedia	Boiling point	3,900 °C	Density, STP	19,050 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	27 W/mK
	32	Weight	238.02891 u	Ionization, 1st	597.6 kJ/mol	Heat, specific	116 J/kgK
	21	Energy levels	2, 8, 18, 32, 21, 9, 2	Radius, calculated	N/A pm	Abundance, universe	2.0E-8 %
	9	Electronegativity	1.38	Hardness, Brinell	2,400 MPa	Discovered	1789 AD
<b>93</b> <b>Np</b> Neptunium (237)	2	Series	Actinoids	Melting point	644 °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Neptunium</a> Wikipedia	Boiling point	4,000 °C	Density, STP	20,450 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	6 W/mK
	32	Weight	237 u	Ionization, 1st	604.5 kJ/mol	Heat, specific	N/A J/kgK
	22	Energy levels	2, 8, 18, 32, 22, 9, 2	Radius, calculated	N/A pm	Abundance, universe	0 %
	9	Electronegativity	1.36	Hardness, Brinell	N/A MPa	Discovered	1940 AD
<b>94</b> <b>Pu</b> Plutonium (244)	2	Series	Actinoids	Melting point	640 °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Plutonium</a> Wikipedia	Boiling point	3,230 °C	Density, STP	19,816 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	6 W/mK
	32	Weight	244 u	Ionization, 1st	584.7 kJ/mol	Heat, specific	N/A J/kgK
	24	Energy levels	2, 8, 18, 32, 24, 8, 2	Radius, calculated	N/A pm	Abundance, universe	0 %
	8	Electronegativity	1.28	Hardness, Brinell	N/A MPa	Discovered	1940 AD
<b>95</b> <b>Am</b> Americium (243)	2	Series	Actinoids	Melting point	1,176 °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Americium</a> Wikipedia	Boiling point	2,011 °C	Density, STP	13,670 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	10 W/mK
	32	Weight	243 u	Ionization, 1st	578 kJ/mol	Heat, specific	N/A J/kgK
	25	Energy levels	2, 8, 18, 32, 25, 8, 2	Radius, calculated	N/A pm	Abundance, universe	0 %
	8	Electronegativity	1.3	Hardness, Brinell	N/A MPa	Discovered	1944 AD
<b>96</b> <b>Cm</b> Curium (247)	2	Series	Actinoids	Melting point	1,345 °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Curium</a> Wikipedia	Boiling point	3,110 °C	Density, STP	13,510 kg/m <sup>3</sup>
	18	State at 0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	247 u	Ionization, 1st	581 kJ/mol	Heat, specific	N/A J/kgK
	25	Energy levels	2, 8, 18, 32, 25, 9, 2	Radius, calculated	N/A pm	Abundance, universe	0 %
	9	Electronegativity	1.3	Hardness, Brinell	N/A MPa	Discovered	1944 AD

<b>97</b> <b>Bk</b> Berkelium (247)	2	Series	Actinoids	Melting point	1,050 °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Berkelium</a> Wikipedia	Boiling point	N/A °C	Density, STP	14,780 kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	10 W/mK
	32	Weight	247 u	Ionization, 1st	601 kJ/mol	Heat, specific	N/A J/kgK	
	27	Energy levels	2, 8, 18, 32, 27, 8, 2	Radius, calculated	N/A pm	Abundance, universe	0 %	
	8	Electronegativity	1.3	Hardness, Brinell	N/A MPa	Discovered	1949 AD	
2								
<b>98</b> <b>Cf</b> Californium (251)	2	Series	Actinoids	Melting point	899.9 °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Californium</a> Wikipedia	Boiling point	N/A °C	Density, STP	15,100 kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	251 u	Ionization, 1st	608 kJ/mol	Heat, specific	N/A J/kgK	
	28	Energy levels	2, 8, 18, 32, 28, 8, 2	Radius, calculated	N/A pm	Abundance, universe	0 %	
	8	Electronegativity	1.3	Hardness, Brinell	N/A MPa	Discovered	1950 AD	
2								
<b>99</b> <b>Es</b> Einsteinium (252)	2	Series	Actinoids	Melting point	859.9 °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Einsteinium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	252 u	Ionization, 1st	619 kJ/mol	Heat, specific	N/A J/kgK	
	29	Energy levels	2, 8, 18, 32, 29, 8, 2	Radius, calculated	N/A pm	Abundance, universe	0 %	
	8	Electronegativity	1.3	Hardness, Brinell	N/A MPa	Discovered	1952 AD	
2								
<b>100</b> <b>Fm</b> Fermium (257)	2	Series	Actinoids	Melting point	1,500 °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Fermium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	257 u	Ionization, 1st	627 kJ/mol	Heat, specific	N/A J/kgK	
	30	Energy levels	2, 8, 18, 32, 30, 8, 2	Radius, calculated	N/A pm	Abundance, universe	0 %	
	8	Electronegativity	1.3	Hardness, Brinell	N/A MPa	Discovered	1952 AD	
2								
<b>101</b> <b>Md</b> Mendelevium (258)	2	Series	Actinoids	Melting point	830 °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Mendelevium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	258 u	Ionization, 1st	635 kJ/mol	Heat, specific	N/A J/kgK	
	31	Energy levels	2, 8, 18, 32, 31, 8, 2	Radius, calculated	N/A pm	Abundance, universe	0 %	
	8	Electronegativity	1.3	Hardness, Brinell	N/A MPa	Discovered	1955 AD	
2								
<b>102</b> <b>No</b> Nobelium (259)	2	Series	Actinoids	Melting point	830 °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Nobelium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	259 u	Ionization, 1st	642 kJ/mol	Heat, specific	N/A J/kgK	
	32	Energy levels	2, 8, 18, 32, 32, 8, 2	Radius, calculated	N/A pm	Abundance, universe	0 %	
	8	Electronegativity	1.3	Hardness, Brinell	N/A MPa	Discovered	1958 AD	
2								
<b>103</b> <b>Lr</b> Lawrencium (266)	2	Series	Actinoids	Melting point	1,600 °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Lawrencium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Solid	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	266 u	Ionization, 1st	470 kJ/mol	Heat, specific	N/A J/kgK	
	32	Energy levels	2, 8, 18, 32, 32, 8, 3	Radius, calculated	N/A pm	Abundance, universe	0 %	
	8	Electronegativity	N/A	Hardness, Brinell	N/A MPa	Discovered	1961 AD	
3								
<b>104</b> <b>Rf</b> Rutherfordium (267)	2	Series	Transition metals	Melting point	N/A °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Rutherfordium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	267 u	Ionization, 1st	580 kJ/mol	Heat, specific	N/A J/kgK	
	32	Energy levels	2, 8, 18, 32, 32, 10, 2	Radius, calculated	N/A pm	Abundance, universe	0 %	
	10	Electronegativity	N/A	Hardness, Brinell	N/A MPa	Discovered	1964 AD	
2								

<b>105</b> <b>Db</b> Dubnium (268)	2	Series	Transition metals	Melting point	N/A °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Dubnium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	268 u	Electron affinity	N/A kJ/mol	Heat, specific	N/A J/kgK	
	32	Energy levels	2, 8, 18, 32, 32, 11, 2	Ionization, 1st	N/A kJ/mol	Abundance, universe	0 %	
	11	Electronegativity	N/A	Radius, calculated	N/A pm	Discovered	1967 AD	
2				Hardness, Brinell	N/A MPa			
<b>106</b> <b>Sg</b> Seaborgium (269)	2	Series	Transition metals	Melting point	N/A °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Seaborgium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	269 u	Electron affinity	N/A kJ/mol	Heat, specific	N/A J/kgK	
	32	Energy levels	2, 8, 18, 32, 32, 12, 2	Ionization, 1st	N/A kJ/mol	Abundance, universe	0 %	
	12	Electronegativity	N/A	Radius, calculated	N/A pm	Discovered	1974 AD	
2				Hardness, Brinell	N/A MPa			
<b>107</b> <b>Bh</b> Bohrium (270)	2	Series	Transition metals	Melting point	N/A °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Bohrium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	270 u	Electron affinity	N/A kJ/mol	Heat, specific	N/A J/kgK	
	32	Energy levels	2, 8, 18, 32, 32, 13, 2	Ionization, 1st	N/A kJ/mol	Abundance, universe	0 %	
	13	Electronegativity	N/A	Radius, calculated	N/A pm	Discovered	1981 AD	
2				Hardness, Brinell	N/A MPa			
<b>108</b> <b>Hs</b> Hassium (277)	2	Series	Transition metals	Melting point	N/A °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Hassium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	270 u	Electron affinity	N/A kJ/mol	Heat, specific	N/A J/kgK	
	32	Energy levels	2, 8, 18, 32, 32, 14, 2	Ionization, 1st	N/A kJ/mol	Abundance, universe	0 %	
	14	Electronegativity	N/A	Radius, calculated	N/A pm	Discovered	1984 AD	
2				Hardness, Brinell	N/A MPa			
<b>109</b> <b>Mt</b> Meitnerium (278)	2	Series	N/A	Melting point	N/A °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Meitnerium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	278 u	Electron affinity	N/A kJ/mol	Heat, specific	N/A J/kgK	
	32	Energy levels	2, 8, 18, 32, 32, 15, 2	Ionization, 1st	N/A kJ/mol	Abundance, universe	0 %	
	15	Electronegativity	N/A	Radius, calculated	N/A pm	Discovered	1982 AD	
2				Hardness, Brinell	N/A MPa			
<b>110</b> <b>Ds</b> Darmstadtium (281)	2	Series	N/A	Melting point	N/A °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Darmstadtium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	281 u	Electron affinity	N/A kJ/mol	Heat, specific	N/A J/kgK	
	32	Energy levels	2, 8, 18, 32, 32, 17, 1	Ionization, 1st	N/A kJ/mol	Abundance, universe	0 %	
	17	Electronegativity	N/A	Radius, calculated	N/A pm	Discovered	1994 AD	
1				Hardness, Brinell	N/A MPa			
<b>111</b> <b>Rg</b> Roentgenium (282)	2	Series	N/A	Melting point	N/A °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Roentgenium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	282 u	Electron affinity	N/A kJ/mol	Heat, specific	N/A J/kgK	
	32	Energy levels	2, 8, 18, 32, 32, 17, 2	Ionization, 1st	N/A kJ/mol	Abundance, universe	0 %	
	17	Electronegativity	N/A	Radius, calculated	N/A pm	Discovered	1994 AD	
2				Hardness, Brinell	N/A MPa			
<b>112</b> <b>Cn</b> Copernicium (285)	2	Series	N/A	Melting point	N/A °C	Modulus, bulk	N/A GPa	
	8	Write-up	<a href="#">Copernicium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>	
	18	State at	0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	285 u	Electron affinity	N/A kJ/mol	Heat, specific	N/A J/kgK	
	32	Energy levels	2, 8, 18, 32, 32, 18, 2	Ionization, 1st	N/A kJ/mol	Abundance, universe	0 %	
	18	Electronegativity	N/A	Radius, calculated	N/A pm	Discovered	1996 AD	
2				Hardness, Brinell	N/A MPa			

<b>113</b> <b>Nh</b> Nihonium (286)	2	Series	N/A	Melting point	N/A °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Nihonium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>
	18	State at 0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	286 u	Ionization, 1st	N/A kJ/mol	Heat, specific	N/A J/kgK
	32	Energy levels	2, 8, 18, 32, 32, 18, 3	Radius, calculated	N/A pm	Abundance, universe	0 %
	18	Electronegativity	N/A	Hardness, Brinell	N/A MPa	Discovered	2004 AD
3							
<b>114</b> <b>Fl</b> Flerovium (289)	2	Series	N/A	Melting point	N/A °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Flerovium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>
	18	State at 0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	289 u	Ionization, 1st	N/A kJ/mol	Heat, specific	N/A J/kgK
	32	Energy levels	2, 8, 18, 32, 32, 18, 4	Radius, calculated	N/A pm	Abundance, universe	0 %
	18	Electronegativity	N/A	Hardness, Brinell	N/A MPa	Discovered	1998 AD
4							
<b>115</b> <b>Mc</b> Moscovium (290)	2	Series	N/A	Melting point	N/A °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Moscovium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>
	18	State at 0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	290 u	Ionization, 1st	N/A kJ/mol	Heat, specific	N/A J/kgK
	32	Energy levels	2, 8, 18, 32, 32, 18, 5	Radius, calculated	N/A pm	Abundance, universe	0 %
	18	Electronegativity	N/A	Hardness, Brinell	N/A MPa	Discovered	2004 AD
5							
<b>116</b> <b>Lv</b> Livermorium (293)	2	Series	N/A	Melting point	N/A °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Livermorium</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>
	18	State at 0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	293 u	Ionization, 1st	N/A kJ/mol	Heat, specific	N/A J/kgK
	32	Energy levels	2, 8, 18, 32, 32, 18, 6	Radius, calculated	N/A pm	Abundance, universe	0 %
	18	Electronegativity	N/A	Hardness, Brinell	N/A MPa	Discovered	2000 AD
6							
<b>117</b> <b>Ts</b> Tennessine (294)	2	Series	N/A	Melting point	N/A °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Tennessine</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>
	18	State at 0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	294 u	Ionization, 1st	N/A kJ/mol	Heat, specific	N/A J/kgK
	32	Energy levels	2, 8, 18, 32, 32, 18, 7	Radius, calculated	N/A pm	Abundance, universe	0 %
	18	Electronegativity	N/A	Hardness, Brinell	N/A MPa	Discovered	2010 AD
7							
<b>118</b> <b>Og</b> Oganesson (294)	2	Series	N/A	Melting point	N/A °C	Modulus, bulk	N/A GPa
	8	Write-up	<a href="#">Oganesson</a> Wikipedia	Boiling point	N/A °C	Density, STP	N/A kg/m <sup>3</sup>
	18	State at 0 °C	Unknown	Electron affinity	N/A kJ/mol	Conductivity, thermal	N/A W/mK
	32	Weight	294 u	Ionization, 1st	N/A kJ/mol	Heat, specific	N/A J/kgK
	32	Energy levels	2, 8, 18, 32, 32, 18, 8	Radius, calculated	N/A pm	Abundance, universe	0 %
	18	Electronegativity	N/A	Hardness, Brinell	N/A MPa	Discovered	2006 AD
8							

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