

The Periodic Table

And Chemical Properties

Dmitri Mendeleev

- A Russian chemist
- Organized elements into patterns based on their physical properties

Periodic Table of the Elements

1

1

H

Hydrogen

1.0

2

2

He

Helium

4.0

metal

metalloid

non-metal

Atomic Number

Symbol

Name

Atomic Mass

22

4+

3+

ion charge(s)

O

natural

Db

synthetic

18

18

Ar

Argon

39.9

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 H Hydrogen 1.0	2 He Helium 4.0	3 Li Lithium 6.9	4 Be Beryllium 9.0	5 B Boron 10.8	6 C Carbon 12.0	7 N Nitrogen 14.0	8 O Oxygen 16.0	9 F Fluorine 19.0	10 Ne Neon 20.2	11 Na Sodium 23.0	12 Mg Magnesium 24.3	13 Al Aluminum 27.0	14 Si Silicon 28.1	15 P Phosphorus 31.0	16 S Sulfur 32.1	17 Cl Chlorine 35.5	18 Ar Argon 39.9
19 K Potassium 39.1	20 Ca Calcium 40.1	21 Sc Scandium 45.0	22 Ti Titanium 47.9	23 V Vanadium 50.9	24 Cr Chromium 52.0	25 Mn Manganese 54.9	26 Fe Iron 55.8	27 Co Cobalt 58.9	28 Ni Nickel 58.7	29 Cu Copper 63.5	30 Zn Zinc 65.4	31 Ga Gallium 69.7	32 Ge Germanium 72.6	33 As Arsenic 74.9	34 Se Selenium 79.0	35 Br Bromine 79.9	36 Kr Krypton 83.8
37 Rb Rubidium 85.5	38 Sr Strontium 87.6	39 Y Yttrium 88.9	40 Zr Zirconium 91.2	41 Nb Niobium 92.9	42 Mo Molybdenum 95.9	43 Tc Technetium (98)	44 Ru Ruthenium 101.1	45 Rh Rhodium 102.9	46 Pd Palladium 106.4	47 Ag Silver 107.9	48 Cd Cadmium 112.4	49 In Indium 114.8	50 Sn Tin 118.7	51 Sb Antimony 121.8	52 Te Tellurium 127.6	53 I Iodine 126.9	54 Xe Xenon 131.3
55 Cs Cesium 132.9	56 Ba Barium 137.3	57 La Lanthanum 138.9	58 Ce Cerium 140.1	59 Pr Praseodymium 140.9	60 Nd Neodymium 144.2	61 Pm Promethium (145)	62 Sm Samarium 150.4	63 Eu Europium 152.0	64 Gd Gadolinium 157.3	65 Tb Terbium 158.9	66 Dy Dysprosium 162.5	67 Ho Holmium 164.9	68 Er Erbium 167.3	69 Tm Thulium 168.9	70 Yb Ytterbium 173.0	71 Lu Lutetium 175.0	
87 Fr Francium (223)	88 Ra Radium (226)	89 Ac Actinium (227)	90 Th Thorium (232)	91 Pa Protactinium (231)	92 U Uranium (238)	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)	

Based on mass of C-12 at 12.00.

Any value in parentheses is the mass of the most stable or best known isotope for elements that do not occur naturally.

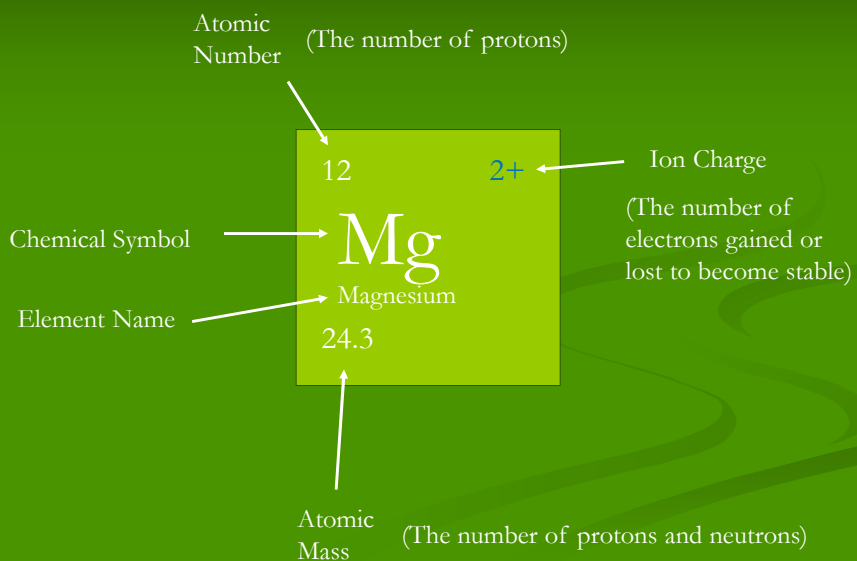
* Temporary names

68 Ce Cerium 140.1	69 Pr Praseodymium 140.9	70 Nd Neodymium 144.2	71 Pm Promethium (145)	72 Sm Samarium 150.4	73 Eu Europium 152.0	74 Gd Gadolinium 157.3	75 Tb Terbium 158.9	76 Dy Dysprosium 162.5	77 Ho Holmium 164.9	78 Er Erbium 167.3	79 Tm Thulium 168.9	80 Yb Ytterbium 173.0	81 Lu Lutetium 175.0
90 Th Thorium 232.0	91 Pa Protactinium 231.0	92 U Uranium 238.0	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)

Organization

- Each row in the table is called a **period**
- There are 7 periods of different sizes
- Each column is called a family or **group**
- There are typically 18 groups
- The elements in a group all share similar properties

Information in the Table



Alkali Metals

- Elements in group 1 are very highly reactive
- They react violently with water and oxygen, so must be stored carefully
- They are soft metals

Alkaline Earth Metals

- Elements in Group 2 burn with bright colours
- They are reactive, but not as much as group 1

Halogens

- Elements in group 17 (sometimes 7) are very reactive
- They form a wide variety of compounds

Noble Gases

- Elements in group 18 (sometimes 8) are the least reactive of all
- Were once thought to be completely unreactive