

Chemistry: The Periodic Table

Key word	Definition
Conductor	A material that conducts charge or energy well.
Density	The mass of a material in a certain volume.
Malleable	Can be bent and shaped.
Ductile	Can be pulled into wires.
Sonorous	Makes a ringing sound when hit.

A Russian scientist called **Dmitri Mendeleev** produced one of the first practical periodic tables (3) in the 19th century. Before him was **Döbereiner** (1) and **Newland's** table (2), both were arranged by **atomic mass** because there wasn't the equipment to know about sub-atomic particles so they based it on mass.

He did 3 things:

1. Grouped together elements with **similar properties**.
2. Put elements in order of **relative atomic mass**.
3. Left **gaps** for unknown elements & predicted their properties.

3

Mendeleev's Table of the Elements

H																
Li	Be											B	C	N	O	F
Na	Mg											Al	Si	P	S	Cl
K	Ca	*	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	*	*	As	Se	Br
Rb	Sr	Y	Zr	Nb	Mo	*	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I
Cs	Ba	*	*	Ta	W	*	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi		

1

Alkali formers		Salt formers	
Li	7	Cl	35.5
Na	23	Br	80
K	39	I	127

2

Newlands' Octaves (his 'Periodic Table' of 1866)

H	Li	Ga	B	C	N	O
F	Na	Mg	Al	Si	P	S
Cl	K	Ca	Cr	Ti	Mn	Fe
Co, Ni	Cu	Zn	Y	In	As	Se
Br	Rb	Sr	Ce, La	Zr	Di, Mo	Ro, Ru
Pd	Ag	Cd	U	Sn	Sb	Te
I	Cs	Ba, V	Ta	W	Nb	Au
Pt, Ir	Tl	Pb	Th	Hg	Bi	Th

Properties of metals and non-metals

Metals	Non-metals
Good conductors of electricity and heat	Poor conductors of electricity and heat
Shiny	Dull
High density	Low density
Malleable	Brittle
Ductile	
Sonorous	Not sonorous

Materials are used for **particular jobs** based on their **properties** e.g. metal saucepan for cooking, plastic coating around electrical wires.

1	2							3	4	5	6	7	0				
Li	Be							H	B	C	N	O	F	Ne			
Na	Mg							Al	Si	P	S	Cl	Ar				
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac															

 Metals  Non-metals

The **modern periodic table** - Is a display of the chemical elements, which are arranged by **atomic number**, electron configuration, and recurring chemical properties.

The **modern periodic table** is based closely on the ideas he used:

- The elements are arranged in order of increasing **atomic number**
- The horizontal rows are called **periods**
- The vertical columns are called **groups**
- Elements in the same group are similar to each other