

## Mendeleev's Periodic Table

Mendeleev used atomic weight as the basis of classification of elements in the Periodic Table. He arranged 63 elements in the increasing order of atomic weight and placed elements with similar nature in same group.

He left vacant places in his periodic table for the elements to be discovered. He left vacant places for Gallium (Ga) and Germanium (Ge) which were not known at that time and named them as Eka-Aluminium & Eka-silicon. He predicted not only the existence of these two elements but also described some of their general physical properties. These elements were discovered later.

He also found some elements that did not fit in his scheme of classification on the basis of atomic weight. In such case he ignored the order of atomic weights.

eg :- Iodine is placed after Tellurium due to its similarity with Halogen.

I (126.9) - Atomic mass

Te (127.6) - Atomic mass

He corrected the atomic mass of Beryllium (Be), Gold (Au) and Platinum (Pt).

## Mendeleev's Periodic Law

The Physical and chemical properties of elements are periodic function of their atomic masses.

Q) Draw back of Mendeleev's periodic Table.

1. Increasing order of atomic mass not strictly followed.
2. No separate place for transition elements, inner transition elements, etc.

## \* MENDELEEV'S CLASSIFICATION

Mendeleev classified the 63 elements in the increasing order of atomic mass. This table consists of 7 periods and 8 groups.

### Advantages

- Mendeleev predicted the discovery of other elements and left space for these new elements: eka-silicon (germanium), eka-aluminium (gallium), and eka-boron (scandium). Thus, there was no disturbance in the periodic table.
- He proved for variance from atomic weight order.
- He pointed out that some of the current atomic weights were incorrect.

### Disadvantages

- There was no place for the isotopes of the various elements.
- His table did not include any of the noble gases, which hadn't been discovered.

## • MODERN PERIODIC TABLE BY MOSLEY

Mosely discovered ATOMIC NUMBER is more fundamental property than atomic mass and arranged elements in the increasing order of ATOMIC NUMBER. This table is also known as Bohr's table.

Moseley proved atomic number is more fundamental property of an element than atomic mass by plotting  $\sqrt{\nu}$  (where ' $\nu$ ' is the frequency of x rays emitted) against atomic number ( $Z$ ). It gave a straight line.

Henry modified the periodic law as: The Physical and chemical properties of elements are periodic functions of their atomic number. This is known as modern Periodic Law. Long form of periodic table contains 7 periods and 18 groups.

Modern Periodic Table is also called Bohr's table. Since it follows Bohr's scheme of the arrangement of elements into four types based on electronic configuration of elements.

Nomenclature of elements with atomic numbers > 100

Digit	Name	Abbreviation
0	nil	n
1	un	u
2	bi	b
3	tri	t
4	quad	q
5	pent	p
6	hex	h
7	sept	s
8	oct	o
9	enn	e

Atomic number	Name	Symbol
101	Unnilunium	Unu
102	Unnilbium	Unb
103	Unniltrium	Unt
104	Unnilquadium	Unq
105	Unnilpentium	Unp
109	Unnilennium	Une
111	Unununnium	Uuu
114	Ununquadium	Uuq
116	Ununhexium	Uuh
117	Ununseptium	Uus
126	Unbihexium	Ubh
127	Unbiseptium	Ubs