

History of Elements and Compounds

Elements were initially used as a reference to any state of matter like liquid, gas, air, solid etc. Indian, Japanese and Greek traditions refer to five elements namely, air, water, earth, fire and aether.

Aristotle conceptualized a new fifth element called 'quintessence' - which apparently formed the heavens. As research continued, many eminent scientists paved way for the current understanding and description of elements.

Among them, work of Robert Boyle, Antoine Lavoisier, Dmitri Mendeleev are particularly notable.

Lavoisier was the first to make a list of chemical elements and Mendeleev was the first to arrange elements according to their atomic number in the Periodic Table.

The most current definition of an element is awarded by the studies carried out by Henry Moseley which states that the atomic number of an atom is expressed physically by its nuclear charge.

Before the 1800s the usage of term compound could also mean a mixture.

It was in the 19th century that meaning of a compound could be distinguished from a mixture. Alchemists like Joseph Louis Proust, Dalton and Berthollet and their studies on various compounds have given modern chemistry the current definition of compound. Proust's work demonstrated to the world of chemistry that compounds were made constant composition of respective elements.

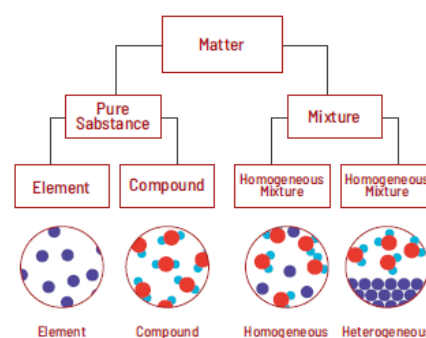
CAS Number

Every chemical substance is identified by its unique numerical identifier - the CAS (chemical abstracts service) number. Hence every chemical compound and element has a CAS number. This makes database searches for elements and compounds more convenient.

In states of matter, you learnt about the form in which they exist, their states. In the respective states they are in, they exist in different types. Study this picture to understand how matter can be typified into pure substances, mixtures and further.

Elements and compounds are pure chemical substances found in nature. The difference between an element and a compound is that an element is a substance made of same type of atoms, whereas a compound is made of different elements in definite proportions.

- Examples of elements include iron, copper, hydrogen and oxygen.
- Examples of compounds include water (H_2O) and salt (Sodium Chloride - $NaCl$)



Differences between elements and compounds at an atomic level. Elements have only 1 type of atoms; compounds have more than 1.

Elements and compounds are both substances; they differ from mixtures where different substances mix together but not via atomic bonds.

