

## 6. Composition of Matter

- **Characteristics of matter particles**

- Atoms are the smallest possible units of the matter which combine to form molecule.
- There are spaces between matter particles.
- Matter particles move continuously – movement increases with rising temperature.
- Matter particles attract each other – attraction force is highest in solids > liquids > gases.

Solid	Liquid	Gas
Definite shape	No definite shape	No definite shape
Occupies space	Occupies space	Occupies space
Definite volume	Definite volume	No definite volume
Cannot be compressed	Slightly compressible	Highly compressible
Rigid	Not rigid	Not rigid
Does not diffuse in other solids	Can diffuse in other liquids	Can diffuse in other gases

Pure substance can be classified as **elements** or **compounds**.

**Element:** The basic form of matter that cannot be broken down into simpler substances by chemical reactions’.

Elements can be further classified as metals, non-metals, metalloids and noble gases.

**Compound:** Compounds are formed when two or more elements combine chemically in a fixed proportion.

- **Chemical formula**

- A chemical formula is the representation of the composition of a molecule in terms of the symbols of elements present in that molecule.

- **Molecular formula** is a **chemical formula** that indicates the kinds of atoms and the numbers of each kind of atom in a molecule of a compound.
- To write the chemical formula of a compound, one should have prior knowledge of two things.
  - **The symbols of the constituent elements.**
  - **The combining capacity of the atom of each element constituting the compound.**