

S2 Solids & Liquids

What is matter?

Matter is all around us. Everything is made up of matter. Matter is made up of atoms and molecules. Atoms are the building blocks for all matter. They are extremely small. When two atoms join together, they make a molecule. Millions and millions of these fit together to form larger things like animals, plants, machines, etc.

States

Matter usually exists in one of three states: solid, liquid or gas. The pencil you write with is a solid, the water you drink is a liquid, and the air you breathe is a gas. The atoms and molecules in things do not change, but the way they move does. Matter can change state when more energy is added to it, usually in the form of heat or pressure.

Water

As already mentioned, water is a liquid. However, it can also exist in a solid form (ice) and a gas form (steam/vapour).

Solid water is called ice. This has low energy and low temperature. The molecules are held tightly together and do not move easily.

Liquid water is called water. Liquid molecules are not as tight as solids, so they move more easily.

Gas water is called steam/vapour. When water boils (like when you make tea or cook vegetables), the heat turns it to vapour. The molecules are much hotter and so move faster than liquid molecules.

More states

Matter can take two other forms, but we do not see them very frequently in everyday life.

Plasma – this occurs at very high temperatures and can be found in stars and lightning bolts. Plasma is like gas, but its molecules have lost some electrons and become ions.

Bose-Einstein condensate – this occurs at super low temperatures. They are similar to solids but with less energy. An example is a nucleon inside a neutron star.

Other facts about solids, liquids and gases

- Gases are often invisible.
- Some solids are see-through, like glass.
- Petrol/Gasoline is a liquid that turns to gas when burnt while powering a vehicle.
- Fire is a mixture of hot gases.