

Science Y4 Autumn 2 – Materials

In this unit children will group and sort materials into solids, liquids, and gases. They will observe that some materials change state when heated or cooled and will be able to name them. They will use the terms evaporation and condensation and know how these processes are linked to the water cycle.

In this unit children will:

Compare and group materials together as to whether they are solid, liquid or gases

Observe that some materials change state when heated or cooled and measure or research the temperature of when this happens - give examples of materials which do this

Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

Know what the terms evaporation and condensation mean and how they relate to the water cycle, using secondary sources

Use pictorial diagrams to observe the organisation of particles in materials for solids, liquids and gas

Observe the evaporation of water from different places in the school linked with temperature and use a thermometer to measure the temperature.

From their data explain how to speed up or slow down evaporation

Key Vocabulary

Matter – Any solid, liquid or gas that exists in the universe.

Substance – Any solid, liquid or gas is a substance.

Solid - A substance that stays the same shape whether it is in a container or not.

Liquid – A substance that can flow and take on the shape of a container.

Gas – A substance that has no fixed shape like oxygen.

Water vapour – Water that is in the form of a gas.

Evaporation – When a liquid becoming a gas.

Condensation – When water vapour in the air, changes from a gas back into a liquid.

Precipitation – Any rain, snow, sleet, or hail that falls to the Earth.

Particle – A very small piece of matter.

Celsius – A scale for measuring temperature, in which water freezes at 0 degrees.

Prior Learning

Y1 Naming common materials and knowing simple properties

Y2 Comparing the suitability of materials

Y3 Rocks

Cross Curricular Links

Key Knowledge

Know that a solid is rigid, is a fixed shape and has a fixed volume. It is solid at room temperature and includes wood, iron, copper, and plastic.

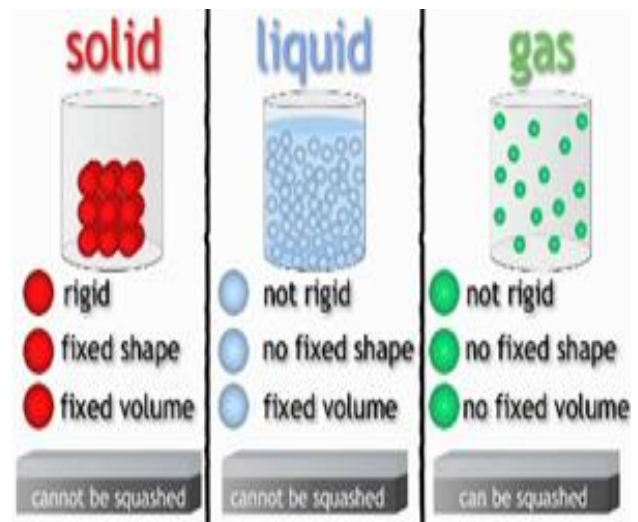
A liquid is not rigid, has no fixed shape but has a fixed volume. It is liquid at room temperature and includes water, milk, blood, and oil.

A gas is not rigid, has no fixed shape and no fixed volume. It is gas at room temperature and includes oxygen, carbon dioxide, nitrogen, and steam.

Water, when changing state by heating –
Starts as ice and melts to form water which then evaporates and turns into steam.

Water, when changing state by cooling –
Starts as steam and condenses to form water which then freezes and turns into ice.

The energy from the sun heats up the water in our rivers, lakes, and oceans. Water then evaporates into the air, turning into a gas called vapour. The water vapour rises into the sky where it cools, turning back into a liquid, forming clouds. This is condensation. Eventually the water droplets in the clouds become too heavy for the air to hold them and fall as rain.



They fall back down to Earth as rain, snow, hail, or sleet known as precipitation. The fallen precipitation is then collected in rivers that flow to the sea which is known as the runoff. The water cycle then begins again as the sun heats the water.

Key Questions

Why can't a liquid be stretched or squeezed?

What happens in the process of evaporation?

What is a reversible change? Name a substance that can go through this process.

What is an irreversible process? Give an example.