

All children – regardless of gender, starting point or background – will have the opportunity to engage with a high-quality science education. They will be equipped with the knowledge, skills and vocabulary to understand how science can be used to explain what is occurring, predict how things will behave and analyse caused. We intend to inspire a sense of enjoyment and curiosity about science.

States of Matter including the Water Cycle



Spring 1

Igniting Prior Knowledge:

Materials can look the same and different.
Ice is frozen water.
Ice is hard.
Water freezes when it is very cold.
Ice melts when it gets warm.



Key Vocabulary:

- states of matter,
- solid, liquid, gas
- mass,
- change of state,
- melting,
- freezing,
- melting point,
- boiling point,
- pressure,

New Knowledge:

- Compare and group materials together, according to whether they are solids, liquids or gases.
- Matter exists in one of three states; solid, liquid or gas.
- Solids retain their shape and take up a fixed amount of space (volume).
- Liquids take the shape of the container holding them but always take up the same amount of space (volume). A liquid can be poured and keeps a level, horizontal surface.
- Granular and powdery solids like sand can be confused with liquids because they can be poured, but when poured they form a heap and they do not keep a level surface when tipped. Each individual grain demonstrates the properties of a solid.
- Gases spread out into the space they occupy; it has no fixed shape or volume. Some gases are invisible. (Teacher note: the particle model of solids, liquids and gases is KS3) Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C).
- Matter can change state.
- A solid changes state to a liquid when it is heated.
- Melting is a state change from solid to liquid.
- Different solids have different melting points. The melting point of a solid is the temperature at which it changes state to a liquid.
- A liquid changes state to solid when it is cooled.
- Freezing is a state change from a liquid to a solid.
- Different liquids have different freezing points.
- Evaporation is a change of state from liquid to gas that happens when a liquid is heated.
- Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy.
- Condensation is the change of state from a gas to a liquid when it is cooled. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
- Water at the surface of seas, rivers etc. evaporates into water vapour. This rises, cools and condenses back into a liquid forming clouds. When too much water has condensed, the water droplets in the cloud get too heavy and fall back down as precipitation rain, snow, sleet etc.) and drain back into rivers etc. This is the water cycle.