What happens when solids and liquids are heated and cooled? – 1

Read the text.

Matter is any material that takes up space and has mass (weight). Liquids and solids are two states of matter. Examples of liquids are water, milk, and honey. Wood, fruit, and sugar are examples of solids.

A liquid can change into a solid and a solid can change into a liquid. We call this changing states. For example, a tub of margarine is a solid in the fridge or at room temperature on the kitchen bench. If it is heated in a microwave, it becomes a liquid. If it is left to cool, it will become a solid once more.

When a substance changes state, it can sometimes change back. This is called a reversible change. No new substance is made. If it cannot be changed back again, it is called irreversible. A new substance has been made. Here is an example of each.

**Reversible change**
The margarine described above turned from a solid to a liquid through heating. It turned back to a solid when it was cooled.

**Irreversible change**
Inside a raw egg is thick, liquid egg white and even thicker liquid yellow yolk. If it is cooked onto a heated frying pan, it can be heated (cooked) until it becomes a solid fried egg. Sometimes the yolk can be left a bit runny. It cannot become a raw egg again, even if it is left to cool.

Solids have different temperatures to which they need to be heated until they melt and become liquid. Ice blocks become solid at 0 °C. As soon as they are taken out of the freezer at 0 °C, they gradually begin to melt. A metal like gold takes an enormous amount of heat before it changes from solid to liquid—more than 1000 °C!

Liquids have different temperatures to which they need to be cooled until they harden and become solid. Margarine that has been heated until it is a liquid will eventually become solid at room temperature. It will happen more quickly if put in the fridge. Oils such as olive oil or sunflower oil need to be cooled a lot more by putting them in the freezer before they will become solid.