What is a liquid?

LIQUIDS have no strength of their own and take the shape of the container that holds them.

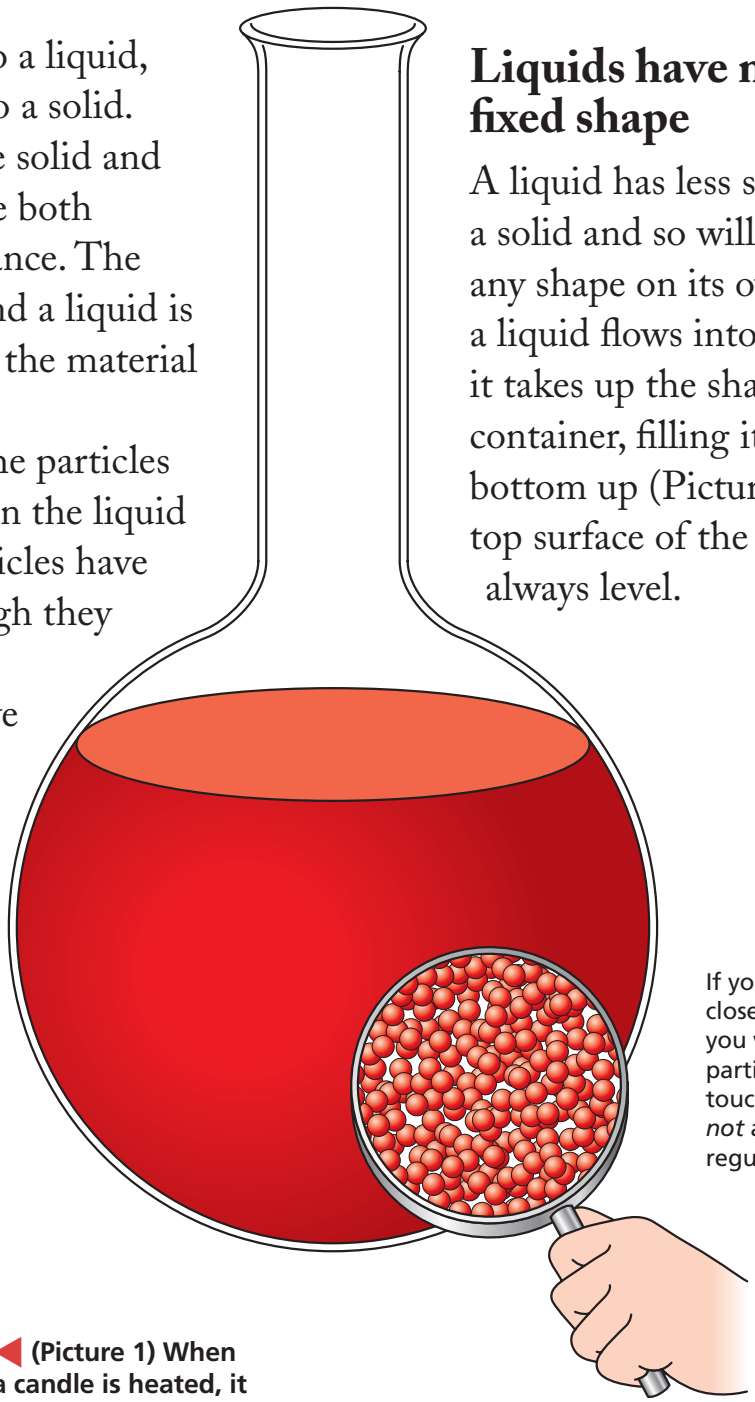
Heat a solid and it turns into a liquid, cool a liquid and it turns into a solid. This can happen because the solid and liquid forms of a material are both still made of the same substance. The difference between a solid and a liquid is only the way the particles of the material are held together.

In a solid, like a candle, the particles are all held firmly together. In the liquid form of candle wax, the particles have become unstuck and, although they are still always touching one another, they are free to move about and drip (Picture 1).

Liquids have no fixed shape

A liquid has less strength than a solid and so will not stay in any shape on its own. When a liquid flows into a container, it takes up the shape of the container, filling it from the bottom up (Picture 2). The top surface of the liquid is always level.

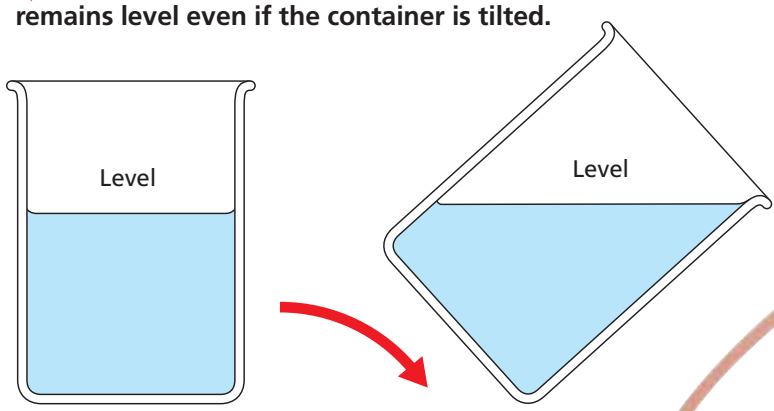
◀ **(Picture 1) When a candle is heated, it melts and drips onto the paper, then becomes a solid again.**



If you could look closely enough, you would see the particles in a liquid touch, but they are *not* arranged in a regular pattern.

▲ **(Picture 2) A liquid always takes on the shape of the container it is put in.**

If you tilt the container, the liquid flows until its top surface is level again (Picture 3). If it is poured from one container to another, it will take up the shape of the new container. If a liquid is poured onto a table, it will spread out all over the table because there will be nothing to contain it.

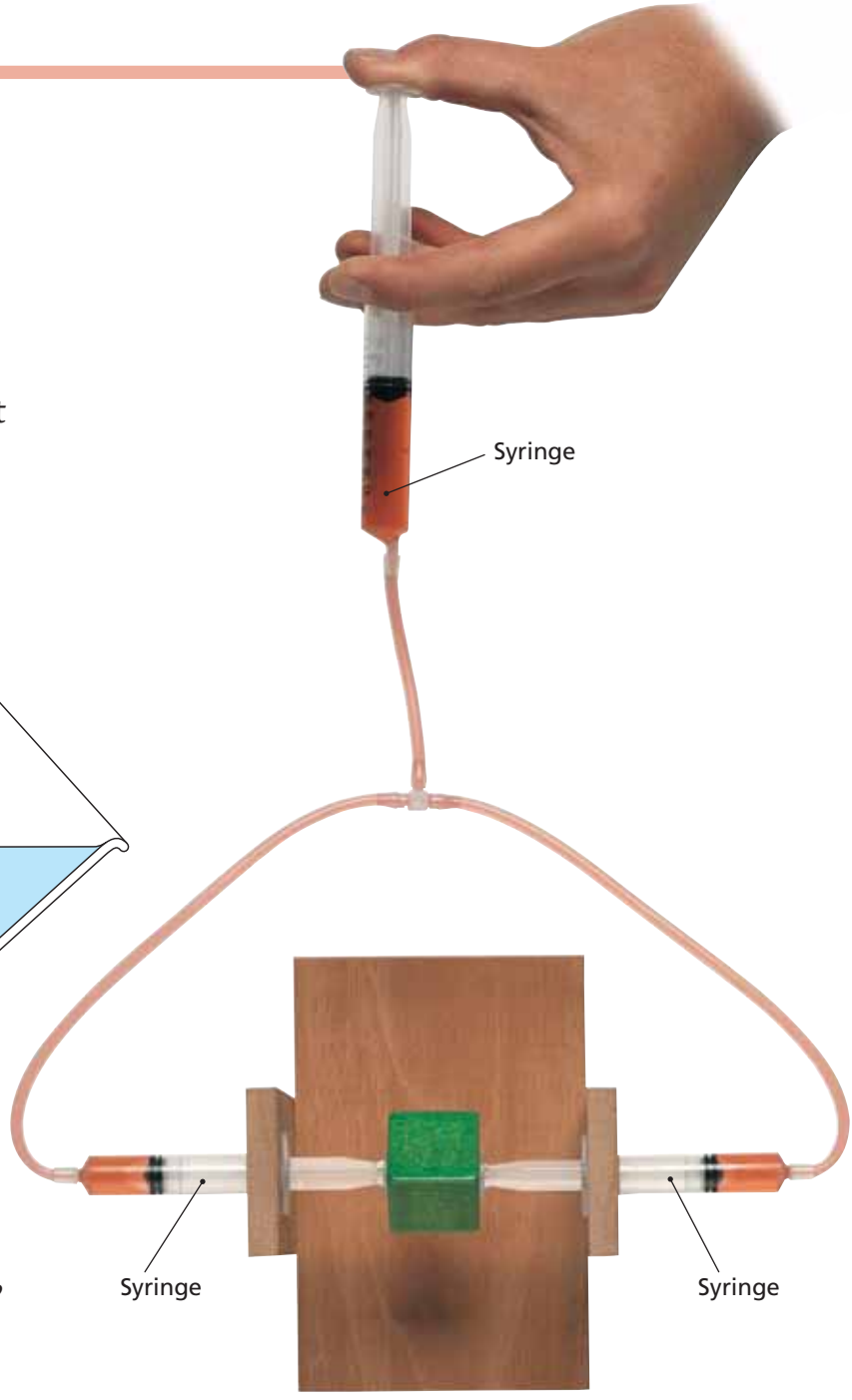


▼ (Picture 3) The top surface of a liquid remains level even if the container is tilted.

Liquids do not squash

Although a liquid easily changes shape, it can't be squashed, because all of the particles are still touching.

You can see this very clearly in Picture 4. In this demonstration, two syringes are holding a wooden block. A third syringe is used to made a piston. When the piston is pushed in, the liquid in the third syringe is squeezed down the connecting tubes and the pistons in the other syringes are pushed out. This can only happen because the liquid can move easily but it cannot be squashed.



▲ (Picture 4) You cannot squash a liquid, so if you press down on it, the pressure goes through the liquid. This is the principle at work above. Car brakes work in much the same way.

Summary

- **A liquid always takes up the same amount of space (it does not change its volume).**
- **A liquid does not have a fixed shape, but changes shape easily (it pours).**
- **A liquid cannot be squashed.**

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