8 Soaking up water

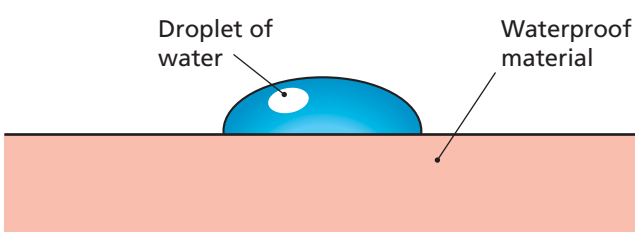
Some materials keep water out. They are waterproof. Other materials soak up water. They are absorbent.

Why do some materials let water through, some soak it up and others keep it out?

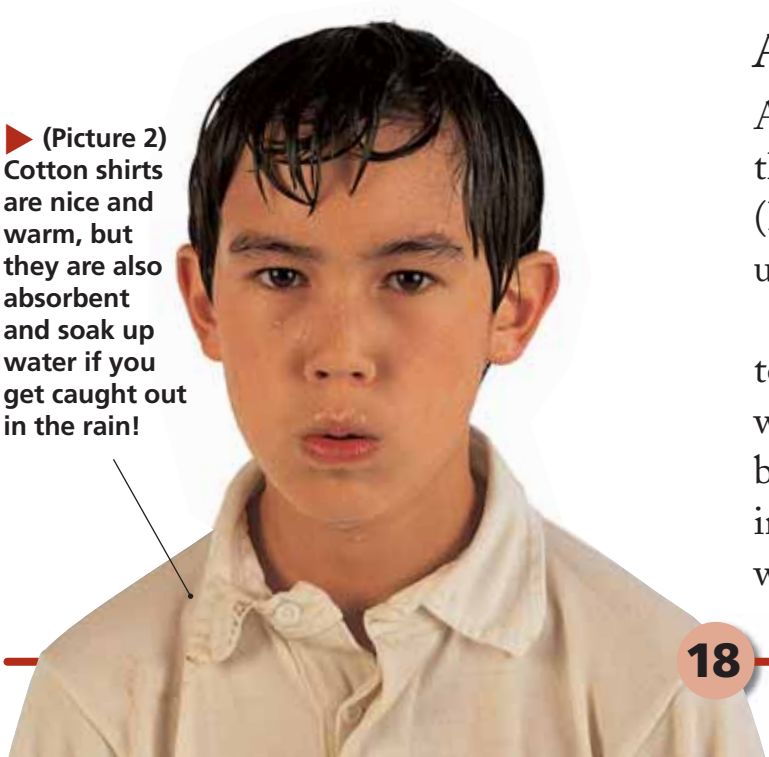
Waterproof

Water is liquid. It will flow into small holes easily.

Let's start with a material that has no holes in it – a sheet of plastic (Picture 1). If you pour some water onto a plastic sheet it will all stay on the surface. Plastic is a **WATERPROOF** material.

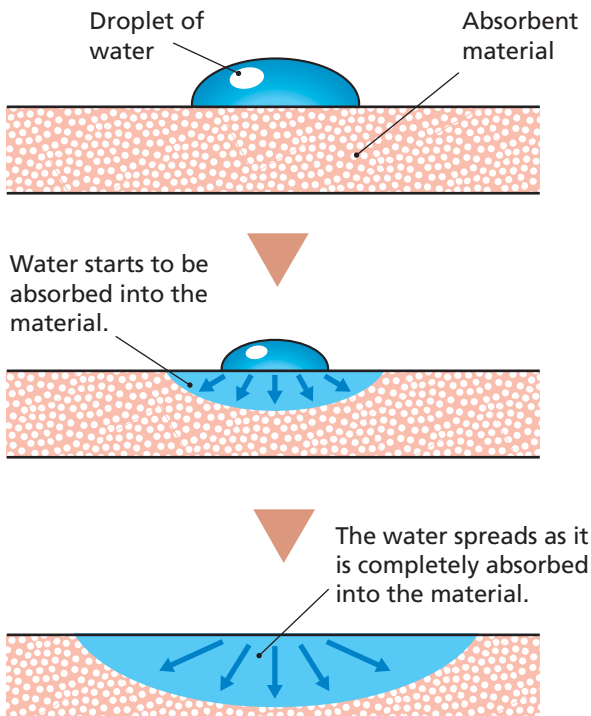


▲ **(Picture 1) Water stays on the surface of a plastic sheet because the plastic has no holes in it. Plastic is waterproof.**



▶ **(Picture 2) Cotton shirts are nice and warm, but they are also absorbent and soak up water if you get caught out in the rain!**

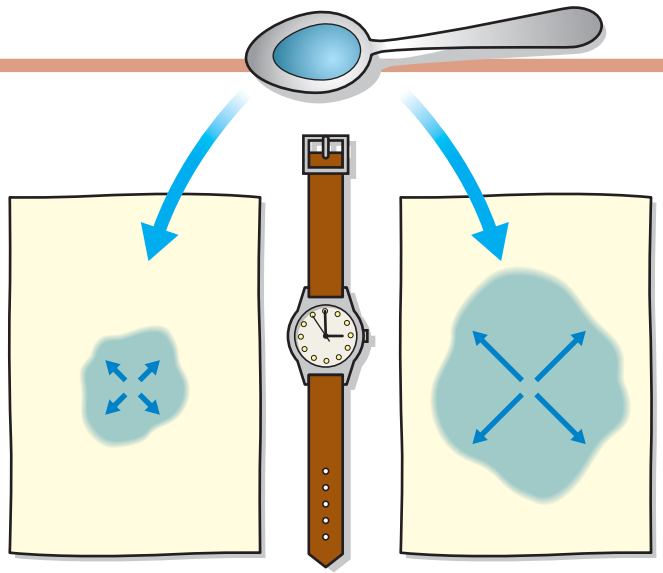
▼ **(Picture 3) Water runs into the holes in-between the fibres in absorbent materials. The speed at which water does this tells you how absorbent the material is. Kitchen towels, blotting paper and sponges all soak up water. They have holes that allow water to flow into them and be held there.**



Absorbent

Absorbent means to soak up. Anything that soaks up water easily is **ABSORBENT** (Pictures 2 and 3). Water will even run upwards into an absorbent material.

If you dip the bottom of a kitchen towel into a dish of coloured water, you will see the water flow upwards. This is because the surface of the towel is covered in tiny holes. They are designed to let water in.



▲ **(Picture 4) This is how to compare the absorbency of different papers. Make sure they are all the same size and thickness, pour exactly the same amount of water onto each paper, then leave them for the same amount of time before checking to see how much of each paper is wet.**

Compare papers

A piece of toilet tissue soaks up a lot of water. However, a piece of writing paper soaks up much less water. This is because the holes in the writing paper are very small, so it's much harder for it to absorb water (Picture 4).

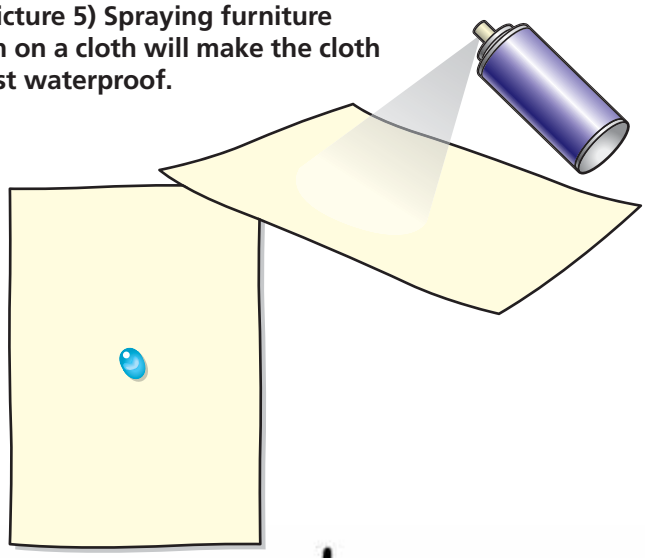
Making a water-resisting material

Water hates wax, fat, grease and oil. You can use this property to make a material water-resistant.

A thin piece of cloth would normally let water through. But if furniture polish is sprayed onto the cloth it will become almost waterproof (Picture 5). The furniture polish is a kind of wax.

Water-resistant materials are used to make outdoor clothing and umbrellas (Picture 6).

▶ **(Picture 5) Spraying furniture polish on a cloth will make the cloth almost waterproof.**



▲ **(Picture 6) Water just runs off, or sits on the surface, of water-resistant materials.**

Summary

- **Waterproof materials have no holes in them.**
- **Absorbent materials have small holes that will allow water to be held inside.**
- **Water-resistant materials are coated in wax or a similar water-hating material.**

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