



## Tape - How does sticky tape stick?

### Fact

- Sticky tape uses an adhesive, which is a sticky stuff. And adhesives stick or bond things together.
- Although things like paper may look flat and smooth, if you looked at them under a microscope their surface is covered with bumps, grooves and hollows.
- The adhesive works by filling up those tiny gaps in the surface of the paper and joins the pieces of paper together.

### Do you know

- You get natural adhesives (sticky stuff) like sap from a tree
- Glue can be made from the protein in milk, which is called casein. When you heat milk with vinegar and add borax to it the long protein chains in casein are weakly joined so they become slippery and gluey.
- You can also get adhesives made from chemicals.
- Adhesives are substances that have long chains of molecules called polymers (plastic also has these long chains of polymers)

### Experiments you can do

Some adhesives are stickier than others.

#### What you need is:

Sticky tape

Glue

Masking tape

Blue tack

(Any other adhesives you can find)

Scrap paper, cardboard, wood, plastic, material, twigs, stones etc.

#### What you do:

Try sticking two pieces of paper together with each of the different adhesives. Which adhesives make them stick the best and make them hard to separate?

Try the experiment with the cardboard, wood, plastic, material and so on.

Is there one adhesive that's stickier than the others?

What adhesive would you recommend for each material?

Check how different adhesives work in different temperatures.

## Other Investigations

Have a look around you and see if you can see anything that uses some kind of adhesive. Maybe a box has been sealed with glue? How is the book you're reading at the moment been finished – has glue been used on the cover to attach the cover to the book? Are there posters on your wall – have you used bluetack?

Make some casein glue

### What you need:

The help of an adult

½ a litre of skim milk

Six tablespoons vinegar

1 tablespoon baking soda

¼ cup of water

A glass or enamel pot (a pot that is not made of metal)

A wooden stirring spoon

A pouring jug

### What you do:

Heat the skim milk and the vinegar in the glass or enamel pot until the mixture begins to boil. Turn down the heat and the milk will begin to separate and curdle. Keep stirring until it has stopped curdling. Then turn off the heat and get the adult to pour off the watery liquid. Mix the water and baking soda into the white, lumpy curds. The curds will start to bubble. When the bubbling has stopped you will have made casein glue.