

# The Secret Science of...



## Glue – A Sticky Business

For a long time, glue was made from the skin, bones, and cartilage of animals. Yuck! These animal parts contain a chemical called collagen that's good for making glue.



## Glue that's New!

Scientists have invented a chemical for making sticky stuff called polyvinyl acetate. If you ever make slime from glue and Borax solution, polyvinyl acetate is the molecule in the glue that makes it work.



## Sticking to the Basics

The molecules in glue are long and flexible and made of atoms with positive and negative charges on them. The molecules in paper also have positive and negative charges on them. Since opposites attract, the glue is great for sticking paper together.



## Gecko Toes

Gecko toes stick to walls and other surfaces in a way that's similar to glue, but without actually using glue. Gecko toes have millions of thin fibers with a tiny disc on the end of each. All the positive and negative charges on the molecules in the disc attract the charges on the molecules of the surface to make the gecko stick.

## Find Out More.

Have other questions about sticky stuff? Stick around and find out more!

### How strong can glue be?

A super strong glue from a company called 3M was tested to see how much weight it could hold. The ends of two metal rods were glued together using 3M glue called Scotch-Weld Instant Adhesive. The rods were used to lift and hold up a forklift weighing 17,857 pounds (over 8 tons) for one hour! The rods did not come apart.



### So What's Tape?

Tape is made from a plastic strip with a special kind of glue sprayed onto it. This glue is not as liquidy as regular glue but still works with positive and negative charges. Tape is good for sticking stuff together but tape can also be used for art work and other cool stuff.

### Can bad glue be good glue?

Yes. The famous removable sticky note is a great example. On a sticky note, the glue is sticky enough to make the note stay where you put it but not so sticky that it is hard to pick up. The special glue used for sticky notes forms tiny little balls called microspheres. They are the right size, number, and stickiness to make the note stick well enough but not too well.

