

Elephant's Toothpaste

Can't wait for a reaction to happen? Well, that's where catalysts come in - they speed up a chemical reaction without getting used up themselves. In this experiment the catalyst is yeast, and adding it to hydrogen peroxide produces foam that looks like something an elephant would use to clean its teeth!

You will need:

Empty plastic bottle

4 fl oz. (120ml) hydrogen peroxide, no greater than 3-6 concentration

Dishwashing liquid

Food coloring

Dry yeast

Hot water

Funnel

Baking tray

Instructions:

- 1.) Stand the bottle in the middle of the tray. Using the funnel, pour the hydrogen peroxide into the bottle and add a few drops of food coloring and dishwashing liquid.
- 2.) Mix a teaspoon of yeast with two teaspoons of hot (but not boiling) water in a bowl.
- 3.) Using the funnel again, pour the yeast mixture into the bottle. Quickly remove the funnel and stand back.
- 4.) The liquid starts bubbling before producing a foam that spurts out of the bottles neck. It looks like a massive amount of toothpaste squeezing out of a tube.

Warning Hydrogen peroxide is available at pharmacies. Only concentrations of 3-6 are suitable for this experiment. Do not use higher concentrations.

How does this work?

If left long enough, the hydrogen peroxide will eventually break down into water and oxygen on its own. By adding a catalyst - yeast- the process is speeded up. Hydrogen peroxide lock onto the yeast, and the yeast splits it into oxygen and water without becoming chemically changed itself. The oxygen produced in the reaction combined with the dishwashing liquid to produce a large amount of foam. Some of the water becomes steam because this is an exothermic (heat producing) reaction. The rest of the water is left in the bottle with the dissolved yeast.