

In the elephant's toothpaste experiment we are going to be looking at the effect of a catalyst on breaking down hydrogen peroxide.

The same process can be shown by this smaller experiment.

Hydrogen peroxide is corrosive, so gloves and goggles must be worn for this experiment.

Hydrogen peroxide solution is poured in to a small measuring cylinder.

The hydrogen peroxide is very slow breaking down.

A glass rod coated with manganese dioxide is dipped into the cylinder.

Bubbles immediately start to foam as oxygen is given off.

The manganese dioxide acts as a catalyst, turning the hydrogen peroxide into oxygen and water.

There are many other catalysts for this reaction including several transition metals.

The enzyme catalase found in potatoes and liver will also breakdown hydrogen peroxide.

The elephant's toothpaste experiment uses sodium iodide solution as the catalyst.

For this experiment the following equipment is needed:

A large measuring cylinder.

Sodium iodide solution.

60 cubic centimetres of hydrogen peroxide.

Washing up liquid so that the bubbles produced make foam.

Food colouring to make the bubbles more visible.

A splint.

And a flame source.

Let's start the experiment:

60 cubic centimetres of 100 volume hydrogen peroxide is added to the large measuring cylinder.

Then a small amount of food colouring and washing-up liquid is added.

Then 5 cubic centimetres of saturated sodium iodide solution is added.

You can see a large quantity of foam is produced very quickly.

You can also see that the bubbles are steaming.

The reaction is very exothermic so the mixture becomes hot.

This increases the rate of reaction further.

The foam can be tested by quickly dabbing it rapidly with a glowing splint.

The glowing splint relights, this shows oxygen gas is released.

Let's recap the experiment:

60 cubic centimetres of hydrogen peroxide is added to the measuring cylinder.

A small amount of food colouring and washing up liquid is added.

Then five cubic centimetres of saturated sodium iodide solution is added.

A large quantity of foam is rapidly produced.

The foam can be tested by dabbing a glowing splint repeatedly into the foam.

The glowing splint relights showing oxygen is present in the foam.