

What speeds up a chemical reaction?



Create a speedy reaction

Setting: Indoors

Time: <10 minutes

Concepts: catalytic reactions, chemical reactions

Skills: math, observing

Subject(s):

- ✓ Chemistry

Ages:

- ✓ 9-11
- ✓ 12-14

Materials:

- 3% Hydrogen Peroxide
- Liquid Dish Soap
- 500ml clear bottle
- 1 package (~10ml) yeast
- warm water
- funnel
- food colouring (optional)
- tray



Safety First!

Be careful working with hydrogen peroxide. Young children should have adult assistance.

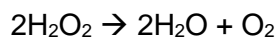
What to do!

1. Place the bottle on top of a tray (this is to catch anything that comes out of the bottle).
2. Combine ½ cup of 3% Hydrogen Peroxide with ¼ of liquid dish soap in a 500 mL bottle. Use a funnel to avoid spilling.
3. If you choose, add a few drops of food colouring and gently swish the bottle to mix it.
4. Dissolve 1 package (~10 mL) of yeast in ¼ cup of warm water. Let it sit for 5 minutes.
5. Add the yeast mixture to the bottle. Watch what happens!

Photo/diagram/video – [Oozing Pumpkins - Cool Halloween Science](#) (video – 2: 18 min.)

What's happening?

Hydrogen Peroxide (H₂O₂) naturally breaks down into water (H₂O) and oxygen (O₂). Below is the formula that chemists use to describe this reaction:



Yeast contains an enzyme called catalase which acts as a catalyst, meaning it speeds up the chemical reaction that breaks down hydrogen peroxide into water and oxygen. The water that is

What speeds up a chemical reaction?

created from this reaction then mixes with the dish soap and makes foam. The oxygen gas that we created comes gushing out of the bottle, pushing the foam up and out of the bottle.

Why does it matter?

Catalase is a common enzyme found in nearly all living organisms, including humans! Have you ever put hydrogen peroxide on a cut to disinfect it? The catalase in our bodies breaks down the hydrogen peroxide when it comes in contact with our blood, causing it to fizz.

In our experiment we used specific measurements to create the reaction. If you use too much or too little of certain mixtures, you may not get the same result. This is a very important key to successful baking too!