

Shaking the Blues

Action

Students will see a clear, colourless solution that turns blue by shaking it. After the blue solution is allowed to sit for a while, it will turn clear again.

Grade Level

Grade 6 - Chemicals and Reactions

Grade 9 - Chemistry and You

Grade 10 - Chemical Change

Chemistry 20 - Chemical Reactions

Materials

- A 400 ml Erlenmeyer flask and stopper
- 5 g potassium hydroxide
- 3 g glucose (or dextrose)
- 2 drops methylene blue
- 250 ml of water

Instructions

- Dissolve the chemicals in the flask with the water. Show the students that there is a clear colourless liquid inside the flask.
- Put the stopper in the flask and shake it until the solution turns blue.
- Set the flask down and allow it to sit until the blue colour fades.

Safety

Potassium hydroxide is poisonous so if students are performing the experiment, make sure they wash their hands before they leave the lab.

Hints

The first time the solution changes from blue to colourless, it may take a few minutes. If the solution has been left sitting for a while, after shaken, the solution should only take about 20 seconds to turn clear again. Over an extended period of time, the clear solution will turn brown and should not be used for the experiment.

Science Principle

When the solution is shaken it turns blue because the oxygen in the flask has been incorporated into the solution and has oxidized the methylene blue. When allowed to sit, the glucose or dextrose in the solution reduces the methylene blue, turning the blue solution back to being clear and colourless. This reaction will continue for a few hours at which time the cork must be taken off so the oxygen is replenished in the flask. This is an example of a reversible chemical reaction.