

STEM from Home

Amazing Chemistry!!

Introduction

Acid might sound like danger and base could remind you of baseball. From our kitchen to our earth, acids and bases are common substances found right around us. If you have tasted lemon juice or washed your clothes using detergent powder, then you have experienced acids and bases. There are various ways to compare acidity and basicity. Certain things we can taste, to help make a good guess where they can fall. Other substances we can't sample in that way. Instead we need to use something called an indicator. Indicators change colour in acid or base.

In this STEM pack, your task includes making of indicators, testing with substances available at your home. You will also make a rainbow using a red cabbage indicator. Hope you will love digging through the pantry to test out whether the items are an acid or a base!

This week your tasks include using Scratch to demonstrate different types of adaptations; solving a crossword puzzle; and designing a solution to an adaptation challenge.

Main Activity:

Introduction

Indicators change colour as and when added to acids and bases. Turmeric is one of the natural indicators. In this activity, you will learn about acidic and basic nature of substances present around yourself. You can test as many substances as you want!

What You Will Need

1. Turmeric powder
2. Bowl and spoon
3. Water
4. White paper
5. Different substances: edible items or household liquids

ACIDS

taste sour reacts with some metals to give off hydrogen gas
conducts electricity in solution



BASES

taste bitter
feels slippery
dissolve fats and oils



Follow these steps

1. Take a spoonful of turmeric powder in a bowl.
2. Add water to it and make a paste.
Note: The paste should not be very runny nor it should be very thick.
3. Spread it on the white paper. Let it dry
4. Cut the white paper into thin strips.
5. Your turmeric paper is ready.
6. Test the turmeric strip with all the substances taken.
7. Note the colour change.

[Let's get started](#)

What you will learn

1. To make an indicator strip.
2. To identify acids and bases with the help of colour change.

Bonus Activities

Activity 1: Chemical Rainbow

Introduction

Let's use the red cabbage for colourful chemistry. It won't yield a pot of gold, but you will get to create a rainbow of kitchen chemistry and fun! In this activity, you will prepare the red cabbage indicator liquid and make the rainbow.

What Will You Need

1. 7 glasses
2. 7 teaspoons
3. Soda
4. Vinegar
5. Baking Soda
6. Water
7. Soda water
8. Laundry detergent (powder)
9. Lemon juice
10. Red cabbage (our show stopper!!)

Weblink: [Let's start](#)

What Will You Learn

Red or purple cabbage has a water-based pigment in its dye called anthocyanin. This fancy pigment can be used as a pH indicator (universal indicator)! It reacts by changing colour in acidic and alkaline (basic) environments. This beautiful purple liquid will change to a **bright pink in acidic medium** and **green in alkaline (basic) mediums!** Science really can be beautiful!

Weblink [Access the simulation](#)



Challenge Activity : Guess The Drink!

Hope you all get excited when you are invited to a birthday party! Isn't it? Viraat was invited to a birthday party of his friend. All the kids were very happy. After dancing and playing games, they got tired and went to the drink stall. Alas! They have to guess the chemical nature (acidic, basic or neutral) of the drink by tasting it or by testing it. But our little boy Viraat is allergic to acidic drinks so he can't taste the drinks. And for testing the drinks the only indicator provided was turmeric paper stripes.

Your Challenge

Every child is given 3 turmeric strips and 3 glasses of different drinks. Now you have to find out how Viraat did justice to the drinks? Was he able to drink basic or neutral drinks?

Try to find out and click the pictures, compile and submit your observation in the form of a [presentation](#) or [docs](#).