

Aim: to make an indicator from red cabbage.

Materials:

- ♦ Red cabbage leaves
- ♦ 250mL beaker
- ♦ Bunsen burner, tripod, gauze mat, bench mat
- ♦ 8 x test tubes
- ♦ Test tube rack
- ♦ Dilute (0.1M) hydrochloric acid
- ♦ Dilute (0.1M) sodium hydroxide solution
- ♦ Vinegar
- ♦ Salt solution
- ♦ Distilled water
- ♦ Soft drink
- ♦ Lemon juice
- ♦ Antacid tablet

Method:

1. Tear up one or two red cabbage leaves and place them in the beaker with enough water so that the cabbage is just covered.
2. Heat the beaker until the water is gently boiling.
3. Continue to boil until the water has been strongly coloured red by the cabbage leaves.
4. Allow to cool and then filter, strain or pick out the cabbage leaves and put in the bin.
5. Place 8 test tubes in the test tube rack and split your cabbage water equally between them.
6. Top them up with water so that the test tubes are about half full.
7. Use the eyedropper to put about 1cm of the dilute hydrochloric acid solution in the first of the cabbage water test tubes.
8. Record what colour it turns in the table on the next page.

9. In the second cabbage water test tube put 1cm of vinegar. Record the colour it changes to in the table.
10. In the third test tube put 1cm of distilled water. Record the colour it changes to in the table.
11. In the fourth test tube put 1cm of salt solution. Record the colour it changes to in the table.
12. In the fifth test tube put 1cm of sodium hydroxide solution. Record the colour change in the table.
13. In the sixth test tube put 1cm of lemon juice. Record the colour change in the table.
14. In the seventh test tube put 1cm of soft drink. Record the colour change in the table.
15. Drop an antacid tablet into the eighth test tube. Record the colour change in the table.

Results:

Test tube	Type of solution	Name of solution	Colour with red-cabbage indicator
1	Strong acid	Hydrochloric acid solution	red
2	Weak acid	Vinegar	pink
3	Neutral	Distilled water	no change
4	Weak base	Salt solution	no change
5	Strong base	Sodium hydroxide solution	green
6	Unknown	Lemon juice	pink
7	Unknown	Soft drink	purple
8	Unknown	Antacid	purple.

Questions:

You now need to find out what type of solution test tube 6, 7, and 8 is.

1. Look at the colour of test tube 6.

What colour is it? pink

Look at test tubes 1-5, which test tube is it the most similar colour to? 2, 1

Therefore, what type of solution is it?

weak acid

2. Look at the colour of test tube 7.

What colour is it? purple

Look at test tubes 1-5, which test tube is it the most similar colour to? 2

Therefore, what type of solution is it?

weak acid

3. Look at the colour of test tube 8.

What colour is it? purple

Look at test tubes 1-5, which test tube is it the most similar colour to? 2

Therefore, what type of solution is it?

weak acid