

Acids and alkalis

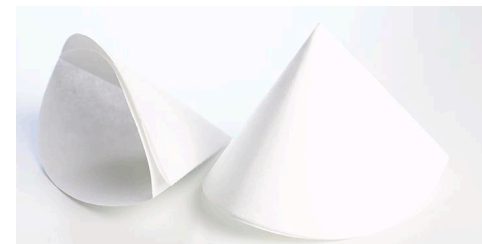
Acids are substances that taste sour. Lemon juice and vinegar both contain acids. Alkalis are the opposite of acids. Common examples include soap and toothpaste.

It is safe to eat the acid in lemons and to use soap but it can be hazardous when using acids or alkalis. Acids and alkalis can be harmful and some are corrosive which means they can burn your skin and eyes. **If you spill any acid or alkali on your hand wash it in water. If you get any in your eyes you will need to rinse your eyes with water.**

Indicators are substances that change colour in acids and alkalis. You are going to make some indicator from red cabbage. When you have made the indicator you are going to use it to test some different substances.

How to make red cabbage indicator

- 1) Chop about a handful of cabbage into chunks and put into a glass or jug or use a beaker
- 2) Add around 100 ml of very hot or boiling water. BE CAREFUL WITH HOT WATER
- 3) Leave for 2-3 minutes
- 4) Sieve, strain or filter out the chunks of cabbage
- 5) Leave to cool for a few minutes

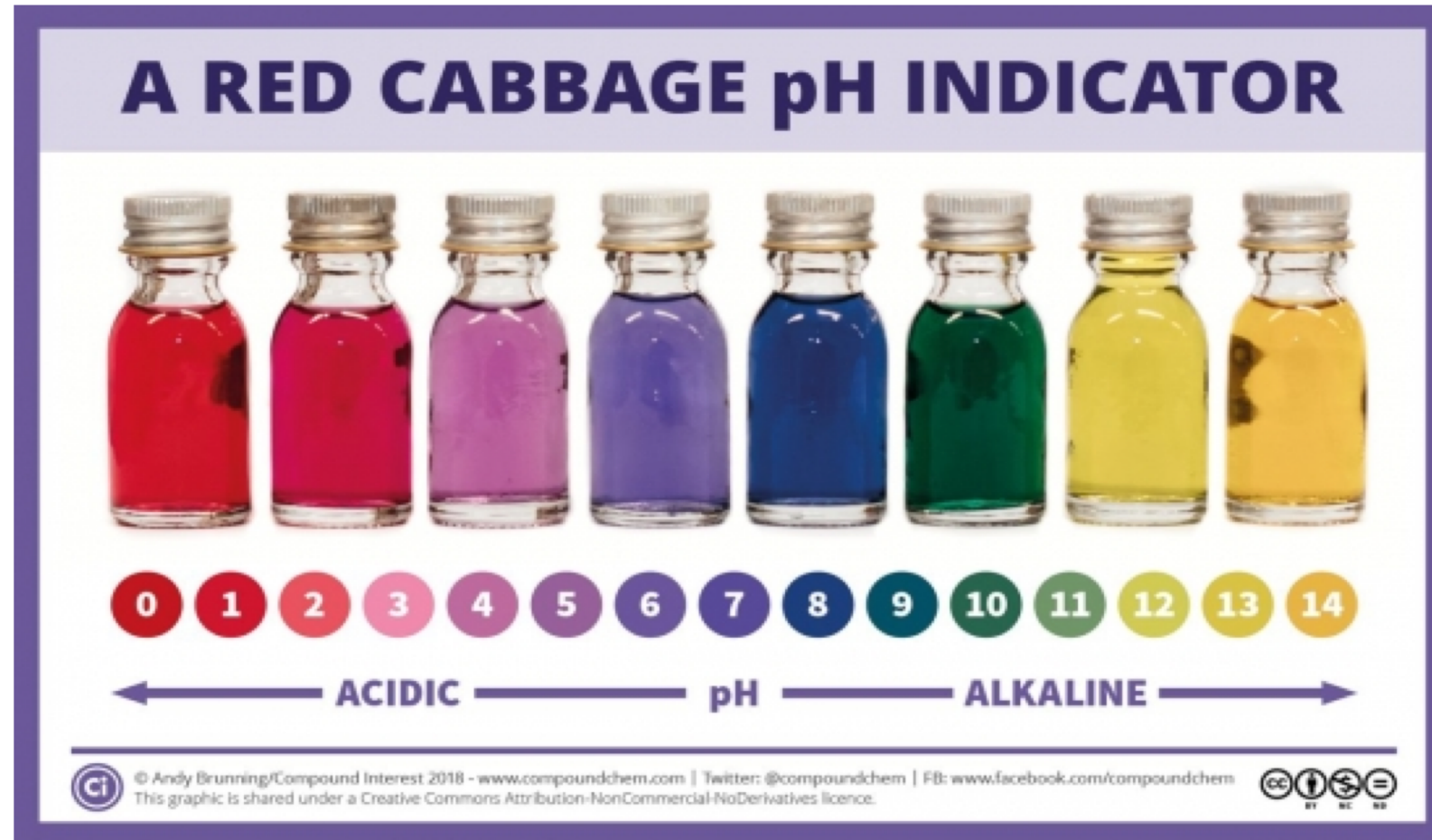




- Add a few drops of one of the substances to a spotting tile.
- Add a drop of red cabbage indicator to the substance.
- Note the colour in the second column.
- Repeat for the other substances.

Substance	Colour	pH	Acid, alkali or neutral?
Vinegar			
Lemon juice			
Sodium bicarbonate			
Water			
Sodium hydroxide			
Hydrochloric acid			

When you have finished you can fill in the 3rd and 4th columns using the colour chart below

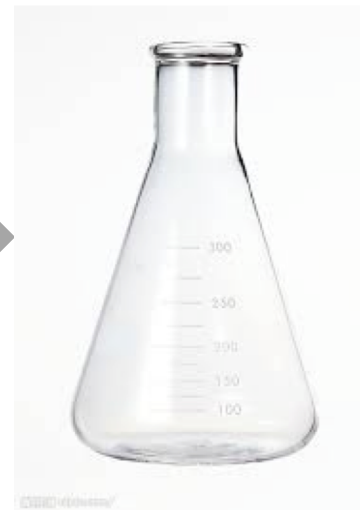


- The strength of an acid or alkali is measured using the pH scale.
- Acids have a pH less than 7.
- Alkalis have a pH greater than 7
- If a substance is neither an acid nor an alkali it is neutral and has a pH of 7

Reacting vinegar and sodium bicarbonate

- Add 20ml of vinegar to a flask
- Add about 20ml of red cabbage solution to the flask
- Swirl the flask to mix it but don't shake it
- Insert the funnel into the empty balloon as shown
- Add some sodium bicarbonate into the funnel and tap into the balloon
- Carefully stretch the end of the balloon over the mouth of the flask.
- Tip the contents of the balloon into the flask.

20ml vinegar
 and 20 ml red
 cabbage juice



Describe what happened as you mixed the vinegar and the sodium bicarbonate:

Is this a reversible or irreversible change?

The reaction produces carbon dioxide gas and the acid in the vinegar is neutralised.

What happened to the colour of the red cabbage indicator during the reaction?