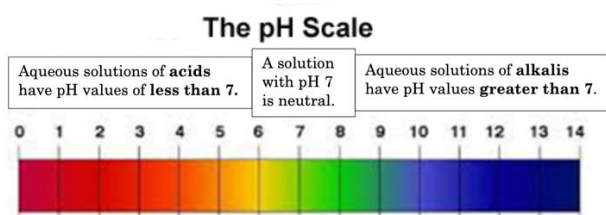


The pH Scale

1. Substances can be classified into **acidic**, **alkaline** and **neutral** solutions
2. The pH scale, from **0 to 14**, is a measure of the acidity or alkalinity of a solution
3. The pH scale can be measured using litmus, universal indicator or a pH probe.
4. A solution with **pH 7 is neutral**.
5. Aqueous solutions of **acids have pH values of less than 7**
6. Aqueous solutions of **alkalis have pH values greater than 7**
7. An aqueous solution is any solution in which the solvent is water



8. Strong acids have a pH from 0 to 3.
9. Weak acids have a pH of 4 to 6.
10. Strong alkalis have a pH from 11 to 14.
11. Weak alkalis have a pH from 8 to 10.
12. Strong acids and strong alkalis are both **corrosive**.
13. Weak acids and alkalis are less corrosive.
14. Many substances we use every day are acidic or alkaline.
15. Lemon juice is acidic.
16. Bleach (and many other cleaning agents) are alkaline.

27. **Acids** will turn universal indicator **red or orange**.
28. **Neutral** solutions will turn universal indicator **green**.
29. **Alkaline** solutions will turn universal indicator **blue or purple**.

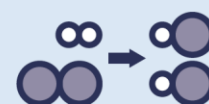


Neutralisation

30. In neutralisation reactions an acid reacts with an alkali to form a salt and water.
31. Neutralisation forms a neutral (pH7) solution.
32. A salt is a metal compound made from acid.
33. A salt is formed when the hydrogen in an acid is replaced by a metal.

Acids + alkali/base → salt + water

Acronym: **A + A/B → S + W**





Indicators

- Indicators will show the pH of the substance by a colour change.
- Litmus indicator can show if a solution is acidic or alkaline.



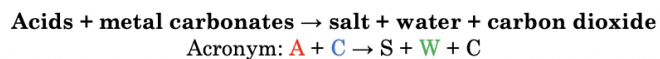
- Litmus indicator is red in an acidic solution.
- Litmus indicator is blue in an alkaline solution.
- Litmus indicator remains the same colour in a neutral solution.
- If using litmus paper, blue litmus paper turns red in an acidic solution.
- Red litmus paper turns blue in an alkaline solution.
- To remember this, it might be helpful to memorise the rhyme
Blue to red, acid is said
Red to blue, acid untrue

**Acid****Alkali**

- Universal indicator is sometimes called UI
- Universal indicator can be used as a liquid solution or as paper strips to dip into a solution.

Metal Carbonates

- Metal carbonates react with acids in neutralisation reactions to form a salt, water and carbon dioxide



- In an open system these products can escape, and the system is neutral
- In a closed system carbon dioxide reacts with water to form carbonic acid, which makes the system acidic

