



Indicators

Unit 3 Lesson 9

Indicators

Students will be able to:

- Use indicators to classify solutions as acid, base or neutral.

Key Vocabulary:

Acid, Base, Indicator, Litmus, Neutral, pH, Universal indicator

Indicators

What are indicators and why do we use them?

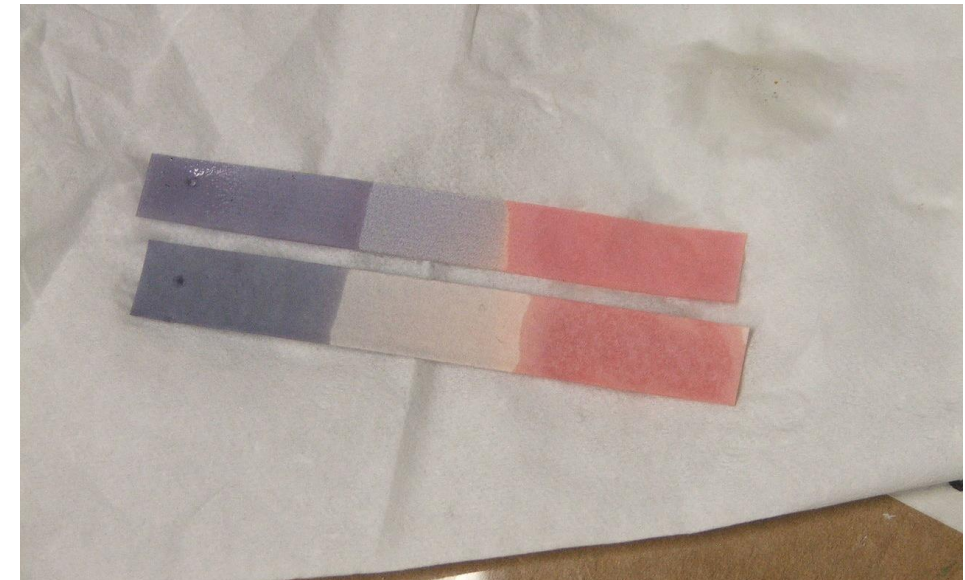
- A quick way to tell whether a solution is an acid, or a base is to use an indicator.
- Indicators are chemicals made from the dyes which have been extracted from plants.
- These chemicals change color when placed in different solutions depending on whether that solution is an acid or a base.



Indicators

What are indicators and why do we use them?

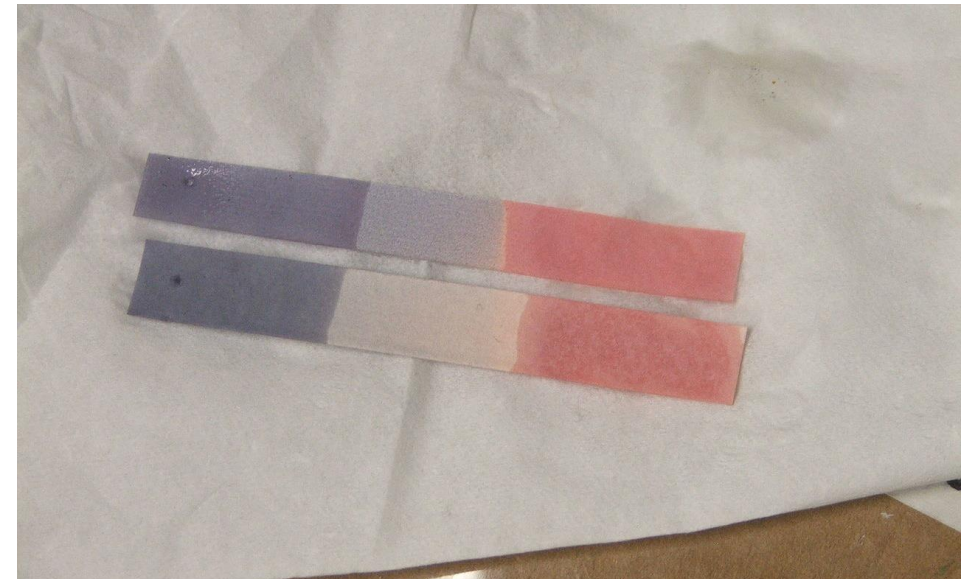
- Many different types of indicators are used in chemistry.
- The two that are most used are litmus paper and universal indicator.



Indicators

Litmus paper

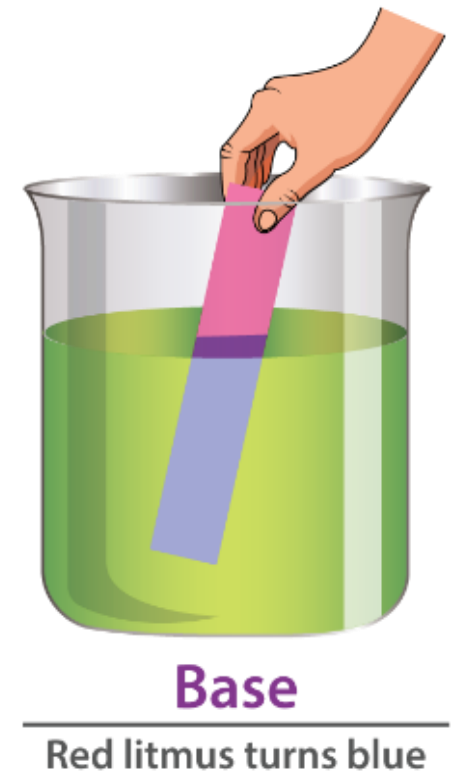
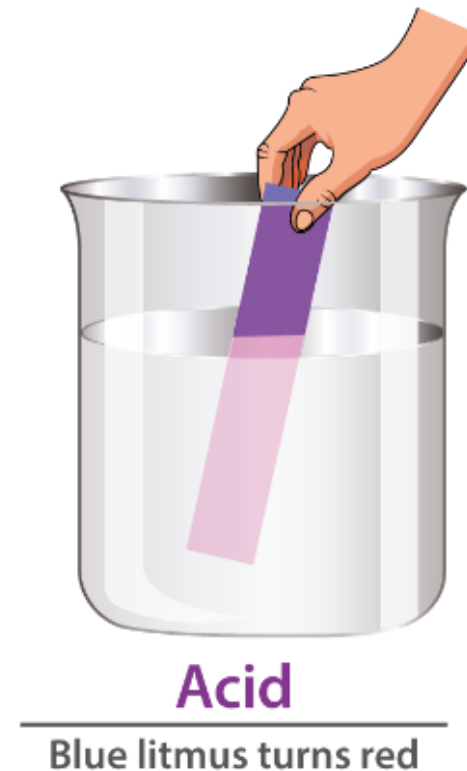
- Litmus is a chemical extracted from lichens which grow on the bark of trees and on rocks.
- It is either **blue** or **red** in color.
- Litmus is usually found in the lab as blue or red **paper** strips, although it also exists as a solution.



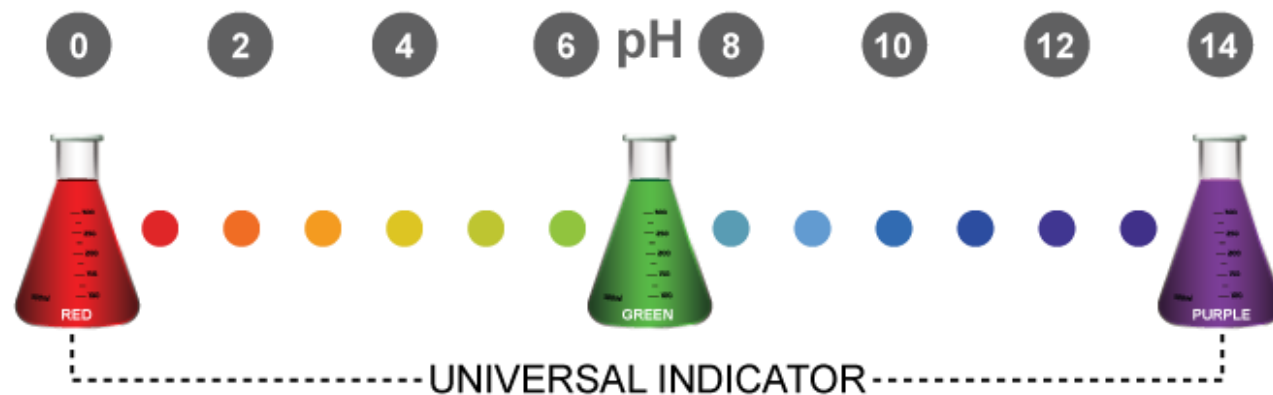
Indicators

Litmus paper

- Blue litmus paper will turn red if placed in an acidic solution, it remains blue when placed in a basic solution.
- In contrast, red litmus will turn blue in a basic solution and stays red when placed in an acidic solution.
- Litmus only tells you whether a substance is an acid or a base, not how strong that solution is.



Indicators



Universal Indicator

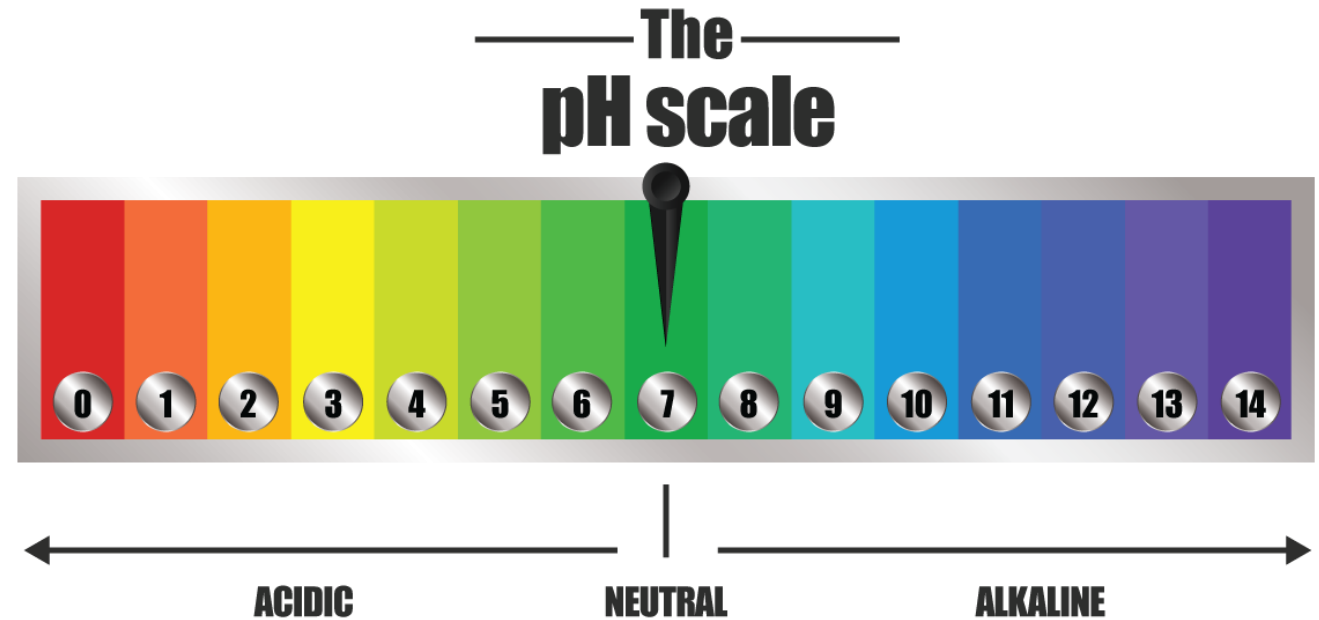
- Universal indicator is a mixture of several different chemical indicators which enables us to see how acidic or basic a substance is by changing color.
- This color relates to the pH scale which grades acids from 0-6 and bases from 8-14.
- Substances which are neither acid or base are termed neutral and have a pH of 7.



Indicators

Universal Indicator

- Like litmus paper, universal indicator comes as either a solution or as a paper strip.
- More information about the details of the pH scale can be found in lesson 3-10 of this unit.



Indicators

Other Indicators

- There are also other synthetic (man-made) indicators which are used in chemistry.
- Some examples of these are outlined below in the diagram to the right:

