

Acids, Bases, and pH

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A dark blue diagonal gradient bar that starts from the bottom left and extends towards the top right, covering the lower half of the slide.

What is an Acid? What are the properties of an acid?



An acid is a substance that produces Hydrogen ions when exposed to water. Acids have many other properties such as:

- Sour taste
- When exposed to blue litmus paper it turns red

Finally, some Acids have the word acid in their name, such as, Hydrochloric acid, Citric acid, and Acetic Acid.

What is a Base?

What are the properties of a base?



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A Base is a substance that produces hydroxide ions when dissolved in water. Some properties of a Base are:

- Typically, they are slippery and bitter
- When exposed to red litmus paper they turn blue

Similarly to Acids, many bases have a common word within their names: Hydroxide. This can be seen in Lithium hydroxide, Sodium hydroxide, and Calcium hydroxide.

What is pH? What does it have to do with Acids and Bases?

Substance	pH
Battery acid	0.5
Gastric acid	1.5 – 2.0
Lemon juice	2.4
Cola	2.5
Vinegar	2.9
Orange or apple juice	3.5
Beer	4.5
Acid Rain	<5.0
Coffee	5.0
Tea or healthy skin	5.5
Milk	6.5
Pure water	7.0
Healthy human saliva	6.5 – 7.4
Blood	7.34 – 7.45
Sea water	8.0
Hand soap	9.0 – 10.0
Household ammonia	11.5
Bleach	12.5
Household lye	13.5

pH is a scale that allows us to figure out how acidic or basic a substance. This scale goes from 1 to 14 with 7 being neutral. If the pH is lower than 7 then the substance is acidic and if it's above 7 then the substance is basic. To test pH you can use a variety of methods from litmus paper to an electronic tester to homemade litmus paper.

Useful Facts: Acids, Bases, and pH

Hydroxide = Hydrogen

This is a neutral substance

Hydrogen > Hydroxide

This is an acidic substance

Hydroxide > Hydrogen

This is a basic substance

Within living organisms we use substances called buffers, which donate hydrogen or hydroxide ions, to prevent our pH from fluctuating too much.

Sources

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