

What is pH?



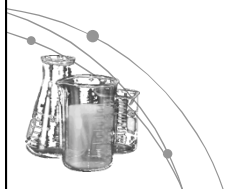
Acids and Bases

- Some of our favorite foods make our tongue curl up because they are **SOUR** or **BITTER**.



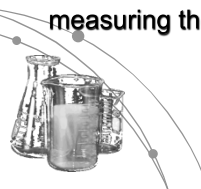
Acidic/Basic

- These foods are either acidic or basic.
- Other substances besides foods have these characteristics.



Acids and Bases

- Things that are neither acids nor bases are neutral.
- pH (power of the Hydrogen ion): measures how acidic or basic a solution is by measuring the number of Hydrogen ions.



What is an acid?

- A solution that has excess H^+
- Often taste sour
- Strong acids can burn skin & eyes
- Strong acids can dissolve metals
- Examples:

- Citric acid = Lemon juice
- Acetic Acid = Vinegar
- Car battery acid (dangerous!)
- Ascorbic acid = Vitamin C



What is a base?

- A solution that has an excess OH^- (very few H^+)
- Can taste bitter, sweetish, or salty
- Strong bases can burn skin & eyes
- Bases react more easily with protein than with metal; they are often used for cleaning
- Examples:

- Milk
- Baking soda
- Soap
- Drain cleaner (dangerous!)
- Chalk
- Blood



- Pure water is Neutral. It is not an acid or a base.




How Do We Measure pH?

- We measure pH by using paper called pH paper or by using a digital probe.

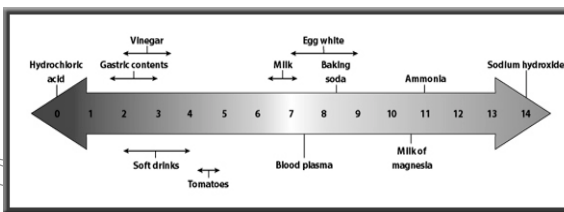



The pH Scale

- pH scale ranges from 0 -14
- pH 7 is neutral; neither acid nor base
- pH 0-6.9 = acid
- pH 7.1-14 = base
- The closer to the ends of the scale, the stronger the solution is

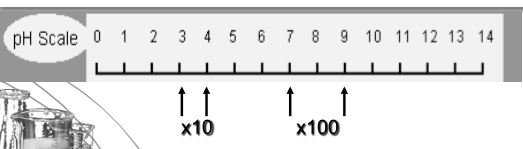



The pH Scale

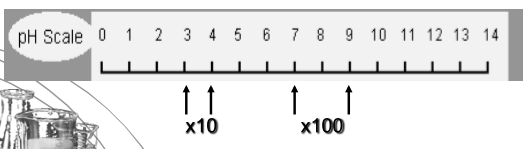
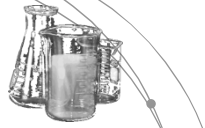
The pH Scale

- Each pH unit is *10 times* as large as the previous one
- A change of 2 pH units means *100 times* more basic or acidic

The pH Scale

- Careful measurement is important
- A mistake of *one* pH unit means *10 times* too much or too little!

Why is pH important?

pH Scale

Low pH is more acidic High pH is more basic

pH too acid for most crops pH too basic for most crops

Distilled water for engines and car batteries Bleach

Soil has to be in a certain pH range for plants to grow and stay healthy.

Fish can't live if the pH is too high or too low

pH Scale

Courtesy of Environment Canada (<http://www.ms.ec.gc.ca/>)

pH and People

pH

Least Activity

Water that has too high or low pH contains harmful dissolved chemicals.