

Part 7

Acids and Bases

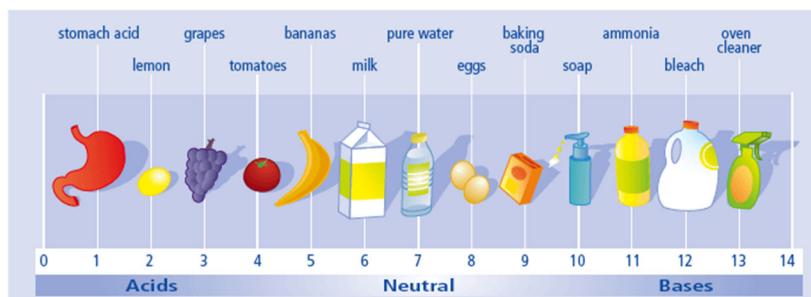


Acids and Bases Are Everywhere

Every liquid you see will probably have either acidic or basic traits. Water (H_2O) can be both an acid and a base, depending on how you look at it. It can be considered an acid in some reactions and a base in others.

How are acids and bases measured?

Scientists use something called the pH scale to measure how acidic or basic a liquid is. Distilled water is 7 (right in the middle). Acids are found between 0 and 7. Bases are from 7 to 14. Most of the liquids you find every day have a pH near 7. They are either a little below or a little above that mark. When you start looking at the pH of chemicals, the numbers can go to the extremes. If you ever go into a chemistry lab, you could find solutions with a pH of 1 and others with a pH of 14. There are also very strong acids with pH values below 1, such as battery acid. Bases with pH values near 14 include drain cleaner and sodium hydroxide (NaOH). Those chemicals are very dangerous.



Terms to Know

Let's look at the whole picture now. There is a scale for acids and bases just like everything else. Here are a couple of definitions you should know:

Acid: A solution that has an excess of H^+ ions. It comes from the Latin word *acidus*, which means "sharp" or "sour".

Base: A solution that has an excess of OH^- ions. Another word for base is alkali.

Aqueous: A solution that is mainly water. Think about the word aquarium. AQUA means water.

Strong Acid: An acid that has a very low pH (0-4).

Strong Base: A base that has a very high pH (10-14).

Weak Acid: An acid that only partially ionizes in an **aqueous** solution. This means that not every molecule breaks apart. Weak acids usually have a pH close to 7 (3-6).

Weak Base: A base that only partially ionizes in an aqueous solution. This means that not every molecule breaks apart. Weak bases usually have a pH close to 7 (8-10).

Neutral: A solution that has a pH of 7. It is neither acidic nor basic.