

# Introduction to pH

Simply put, pH measures the concentration of hydrogen ions in water. An ion is an atom or molecule that has gained or lost electrons, and thus has a negative or positive charge. The pH scale measures the concentration of those charges, assigning them a value from 0 to 14. Pure water at room temperature (77 degrees Fahrenheit), for example, has a pH of 7.0 and is considered neutral. Water with a pH below 7 is defined as an acid and above 7 is an alkaline. Thus, a pH measurement of 0 represents the strongest acid, and a pH value of 14 represents the strongest alkaline.

There is no understating the importance of the pH scale, which was created by Danish chemist S. P. L. Sorensen some 100 years ago. This simple mathematical formula measures the power of hydrogen in a solution and defines, in numeric terms, the properties of water. Today, in laboratories all over the world, Sorensen's pH scale is used to measure the strength or weakness of acids and alkalis, the most important chemical compounds used by chemists and scientists. An accurate pH measurement is the starting point for just about all scientific research and experimentation.

Sorensen's system is logarithmic. As a result, each whole pH value below 7 is 10 times more acidic than the next higher value. For example, pH 4 is 10 times more acidic than pH 5 and 100 times ( $10 \times 10$ ) more acidic than pH 6. The same holds true for pH values higher than 7, each of which is 10 times more alkaline than the next lower whole value. For example, pH 10 is 10 times more alkaline than pH 9 and 100 times ( $10 \times 10$ ) more alkaline than pH 8.

On a practical level, pH values impact our lives in ways we may not realize or think about very often. From the food we eat to the water we drink to the medicines we take; pH measurement is critical.

Farmers rely on pH testing to maintain quality soil that will produce the most abundant and healthy crops. pH testing is also critical in the management and safe disposal of wastewater produced by industrial plants. Without accurate pH testing, it would be impossible to mitigate the effects of pollution such as acid rain, leaving our entire ecosystem at risk.

Indeed, some health practitioners even believe that a diet that is slightly alkaline – emphasizing fresh fruit, vegetables, roots, nuts and legumes – promotes wellness and may help ward off disease. Because our blood is slightly alkaline with a normal pH level between 7.35 and 7.45, our diet should be too, according to this theory.

At Micro Essential Laboratory, we've been at the forefront of pH testing technology since 1934. We offer a range of pH products, such as pH strips and pH paper, that are trusted worldwide for their exceptional quality, reliability and accuracy. Our products can be found in leading laboratories all over the world and are used throughout the health care, food service, education and environmental safety industries.

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