

Acids and Bases

What does pH mean?

Substances can be described as acid, neutral, or base. These words describe the substance's place on a pH scale. pH is a measure of protons (H⁺) in a solution. Acidic substances have high proton concentrations, basic substances have low proton concentration and high hydroxide concentrations (OH⁻).

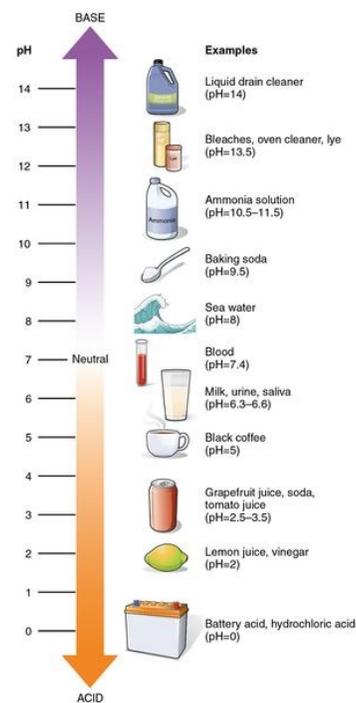
How does the pH scale work?

pH is measured on the logarithmic scale, meaning each number the pH goes up or down, that substance is TEN TIMES more or less acidic. For example, neutral pH is 7. If a substance has a pH of 5, it is 100x more acidic than neutral.

Why is red cabbage a pH indicator?



pH indicators are chemical compounds that can be added to a substance to see whether the substance is acidic or basic. Normally, these indicators cause a color change. Red cabbage juice is a great indicator, always turning pink in the presence of an acid and blue or blue-green in the presence of a base. It contains a pigment molecule that is an anthocyanin. It changes colors in the presence of an acid or a base.



Challenge question: What pH do you think stomach acid is? What about water? Soap?

How can I find out what pH some common household items are?

Ingredients	Instructions <i>Time needed: 35 minutes</i>
<ul style="list-style-type: none"> • Red cabbage, chopped • Large saucepan • Water • Clear jars • Testing substances <ul style="list-style-type: none"> ○ Baking Soda ○ Lemon Juice ○ Vinegar ○ Others? 	<ol style="list-style-type: none"> 1. Have an adult finely chop enough of the red cabbage to place about 4 cups in a pan. 2. Boil water and pour over the chopped cabbage. 3. Let sit for 15 minutes. 4. Strain leaves and retain filtered liquid. 5. Place a little in each clear jar. 6. Add various substances to the jars a drop at a time until the color changes. Pink color change indicates an acid and blue green color change indicates a base.

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