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How to find ph equivalence point

Because buzzwords like "pH-balanced" are common advertising tools in the health and beauty industry, it's easy to ignore them and purchase a product regardless of its pH. However, when it comes to skin cleansers, pH levels do make a difference.Your skin has a pH level of about 5.5. Skin -- or at least the outermost layer of it -- is slightly acidic [source: University of California Newsroom]. The acidic layer helps your skin retain moisture and keeps germs out. To help maintain the skin's fatty protective layer, use a cleanser with a pH level similar to that of the skin itself. If you use a soap that's too alkaline, it will break up the acid in your skin, causing dryness.The pH level of most skin cleansers is slightly higher than 5.5, so the cleanser can break down dirt and oil on your skin. However, soap -- especially bar soap -- typically has a pH level of 9 to 12, which is too high if you're trying to keep your skin moist. Cleansers with lower pH levels leave your skin intact instead of breaking down the fatty tissue [source: Draelos].So, it must be important to use a skin cleanser that says it's pH-balanced, right? Yes and no. Most soap-free cleansers on the market today have balanced pH levels. Therefore, the words "pH-balanced" on a cleanser are more of a marketing ploy than anything else [source: Monroe].Now that you're clear on what pH balanced means to you and your skin, you can be savvy in the skin care aisle. For more information on how pH affects your skin, take a look at the links on the following page.Finding a Product's pH LevelBeauty products -- whether they're skin cleansers or shampoos -- don't often list their exact pH levels on the label even when they claim to be balanced. If you're curious about a product's pH, you can use litmus paper to test if a liquid is an acid, neutral or base. For more specific results, use pH paper, which will turn different colors depending on the acid and alkaline levels [source: American Chemical Society]. In its purest form, water has a pH of 7, which is at the exact center of the pH scale. Particles in the water can change the pH of the water, and most water for use has a pH of somewhere between 6.5 and 8.5.There are some important things to understand about the pH scale and how it relates to water. For instance, it is possible that drinking alkaline drinks may offer some health benefits.Keep reading to learn more about the pH of water.In chemistry, pH is a measurement of the concentration of hydrogen ions in a water-based solution. A lower pH means that there are more hydrogen ions in the liquid, whereas a higher pH indicates fewer hydrogen ions in the liquid.In simple terms, pH is a scale from 1 to 14 that measures the acidity or alkalinity of a liquid. In the middle of the scale is pure distilled water, with a neutral pH of 7. Anything with a pH below 7 is an acid, and anything with a pH above 7 is an alkali, or base.To use everyday examples, vinegar is very acidic, with a pH of about 2. Conversely, bleach is highly alkaline, with a pH of about 13.5.Importantly, this scale only applies to water-based liquids.pH plays an important role in the properties of a liquid containing water.For instance, the pH of water may make certain elements in it, such as minerals and metals, more or less available to the body. Heavy metals in water with a lower pH tend to be more toxic, as they are more available to the body. A high pH would make heavy metals less available, and, therefore, less toxic.The pH may also be a sign of other contaminants or bacterial life in a liquid. In general, a very high or very low pH can make water unusable for certain applications.For instance, hard water is the common term for water containing a lot of minerals. These minerals make the water very alkaline. As the water passes through pipes and machines that use water, such as dishwashers or showers, these minerals stick to both the pipes and each other, leading to mineral buildup.Mineral buildup can cause various issues with water in the home, such as making detergents and soaps less effective. It can also lead to reduced water pressure or even blockages.On the other hand, water with a low pH may corrode metal pipes and extract metal ions into the water, making it harmful to drink or use in the home.Most of the time, water that providers intend for use or drinking will stay closer to the neutral point of 7, although it may still vary slightly. The Environmental Protection Agency (EPA) recommend keeping the pH between 6.5 and 8.5 in drinking water, and many states in the United States choose to enforce these levels.Drinking water and other water-based drinks of varying pH levels may play a role in a few different health factors.Alkaline water and other alkaline products have gained popularity in recent years, becoming a new health trend. According to advocates of alkaline drinks, acidic environments in the body cause several chronic illnesses, which they claim could not persist in an alkaline environment.The thinking behind this is that drinking alkaline water helps the body itself to become more alkaline, which will treat a number of illnesses, including cancer.However, there is little evidence to back up these claims. While drinking alkaline water may temporarily affect the pH of the mouth or urine, there is no scientific proof that it will change the overall pH of the body.The body strictly regulates its pH levels. Changes in the body's internal pH, such as blood pH, can mean serious problems in the organs and tissues. So, if it were possible to change the body's pH using food and drink, it would be dangerous to do so.However, alkaline water may still be helpful for some people. In general, alkaline water tends to be more alkaline because it has minerals and electrolytes in it. Due to this, drinking this water after a workout or while sick may help keep minerals and electrolytes balanced and prevent dehydration.Additionally, the findings of a smaller study suggest that people with acid reflux disease may benefit from drinking alkaline water with a pH of 8.3. The researchers found that alkaline water appears to permanently inactivate an enzyme that plays a role in heartburn, which may reduce symptoms.Researchers have also found that drinking water with a pH of 8.5-10 may be beneficial for people with irritable bowel syndrome (IBS) whose primary symptom is diarrhea. The people who drank water with a pH of 8.5-10 had higher self-reported quality-of-life scores after 8 weeks than those who did not.However, these are small studies, and more human studies are necessary to back up these initial results.Learn more about the potential health benefits of alkaline water here.Labs generally use an electronic pH meter to measure pH accurately. However, it is possible to get a rough estimate of pH using litmus paper. Litmus paper is widely available online and in some stores, such as health food stores and pet supply stores.Litmus paper is a sensitive strip of paper that changes color when it touches water-based liquids. The change in color can give a rough estimate of the pH of the liquid. A person should keep in mind, though, that these are rough estimates and that the actual pH of a liquid can still vary from what the litmus paper says.The pH of a liquid will change depending on the ingredients inside. As a result, fluctuations are possible, even in two products that are very similar, such as two types of water.Here are some general pH ranges for different drinks:The pH of water for drinking or for use in the home is very important. Water that is too alkaline or too acidic can damage pipes and appliances, and it is generally unhealthful to drink.Water naturally varies between about 6.5 and 8.5 on the pH scale, and this is normal. Water that is too far outside this scale may not be safe to drink.Some people may find it helpful to drink alkaline water with a pH higher than 8.5. These individuals include those with digestive conditions, such as IBS. However, larger and higher quality studies will need to back up these claims before experts can make any broad statements about the possible benefits of alkaline water. 1 What Does "Cost Prohibitive" Mean? 2 Responsible Retirement: What's the Maximum Amount You Can Contribute to a 401(k)? 3 Dried vs. Fresh: How Much Dill Should You Use? 4 How Many Tablespoons Are in 1/3 Cup of Butter? 5 What's an S&P 500 Fund and How Do You Invest in One? 1 Strange Americana: The Best Roadside Attractions in America's Western States 2 What Are Some Popular Online Math Game Sites? 3 What Are the Overtone Rules for Playoffs in the NHL? 4 Porous Materials: What Are They? 5 What State Are the New England Patriots From? 1 Tips and Tricks for Making Driveway Snow Removal Easier 2 These Are the Best-selling Cars of All Time 3 What Is the Opposite of a Democracy? 4 What Is Scale of Preference in Economics? 5 A Brief Guide to High Absolute Monocytes A strong acid is one that completely dissociates into its ions in water. This makes calculating the hydrogen ion concentration, which is the basis of pH, easier than for weak acids. Here's an example of how to determine the pH of a strong acid. What is the pH of a 0.025 M solution of hydrobromic acid (HBr)? Solution to the Problem Hydrobromic Acid or HBr is a strong acid and will dissociate completely in water to H+ and Br-. For every mole of HBr, there will be 1 mole of H+, so the concentration of H+ will be the same as the concentration of HBr. Therefore, [H+] = 0.025 M. pH is calculated by the formula pH = - log [H+] To solve the problem, enter the concentration of the hydrogen ion. pH = - log (0.025)pH = -(1.602)pH = 1.602 Answer The pH of a 0.025 M solution of Hydrobromic Acid is 1.602. One quick check to make sure your answer is reasonable is to verify the pH is closer to 1 than to 7 (certainly not higher than this.) Acids have a low pH value. Strong acids typically range in pH from 1 to 3. A pH indicator or acid-base indicator is a compound that changes color in solution over a narrow range of pH values. Only a small amount of indicator compound is needed to produce a visible color change. When used as a dilute solution, a pH indicator does not have a significant impact on the acidity or alkalinity of a chemical solution. The principle behind the function of an indicator is that it reacts with water to form the hydrogen cation H+ or hydronium ion H3O+. The reaction changes the color of the indicator molecule. Some indicators change from one color to another, while others change between colored and colorless states. pH indicators are usually weak acids or weak bases. Many of these molecules occur naturally. For example, the anthocyanins found in flowers, fruits, and vegetables are pH indicators. Plants containing these molecules include red cabbage leaves, rose petal flowers, blueberries, rhubarb stems, hydrangea flowers, and poppy flowers. Litmus is a natural pH indicator derived from a mixture of lichens. For a weak acid with formula HIn, the equilibrium chemical equation would be: HIn (aq) + H2O (l) = H3O+ (aq) + In- (aq) At a low pH, the concentration of the hydronium ion is high and the equilibrium position lies to the left. The solution has the color of the indicator HIn. At a high pH, the concentration of hydronium is low, the equilibrium is to the right, and the solution has the color of the conjugate base In-. In addition to pH indicators, there are two other types of indicators used in chemistry. Redox indicators are used in titrations involving oxidation and reduction reactions. Complexometric indicators are used to quantify metal cations. Methyl red is a pH indicator used to identify pH values between 4.4 and 6.2. At low pH (4.4 and lower) the indicator solution is red. At high pH (6.2 and above) the color is yellow. Between pH 4.4 and 6.2, the indicator solution is orange. Bromocresol green is a pH indicator used to identify pH values between 3.8 and 5.4. Below pH 3.8 the indicator solution is yellow. Above pH 5.4 the solution is blue. Between pH values of 3.8 and 5.4, the indicator solution is green. Because indicators change colors over different pH ranges, they may sometimes be combined to offer color changes over a wider pH range. For example, "universal indicator" contains thymol blue, methyl red, bromothymol blue, thymol blue, and phenolphthalein. It covers a pH range from less than 3 (red) to greater than 11 (violet). Intermediate colors include orange/yellow (pH 3 to 6), green (pH 7 or neutral), and blue (pH 8 to 11). GUSTOIMAGES/SCIENCE PHOTO LIBRARY/Getty Images pH indicators are used to give a rough value of pH of a chemical solution. For precise measurements, a pH meter is used. Alternatively, absorbance spectroscopy may be used with a pH indicator to calculate the pH using Beer's law. Spectroscopic pH measurements using a single acid-base indicator are accurate to within one pKa value. Combining two or more indicators increases the accuracy of the measurement. Indicators are used in a titration to show the completion of an acid-base reaction. pH is a logarithmic measure of the hydrogen ion concentration of an aqueous solution pH = -log[H+] where log is the base 10 logarithm and [H+] is the hydrogen ion concentration in moles per liter pH describes how acidic or basic an aqueous solution is, where a pH below 7 is acidic and a pH greater than 7 is basic. pH of 7 is considered neutral (e.g., pure water). Typically, values of pH range from 0 to 14, although very strong acids may have a negative pH, while very strong bases may have a pH exceeding 14. The term "pH" was first described by Danish biochemist Søren Peter Lauritz Sørensen in 1909. pH is an abbreviation for "power of hydrogen" where "p" is short for the German word for power, potenz and H is the element symbol for hydrogen. Chemical reactions in water are affected by the acidity or alkalinity of the solution. This is important not only in the chemistry lab, but in industry, cooking, and medicine. pH is carefully regulated in human cells and blood. The normal pH range for blood is between 7.35 and 7.45. Variation by even a tenth of a pH unit may be fatal. Soil pH is important for crop germination and growth. Acid rain caused by natural and man-made pollutants changes the acidity of soil and water, greatly affecting living organisms and other processes. In cooking, pH changes are used in baking and brewing. Since many reactions in everyday life are affected by pH, it's useful to know how to calculate and measure it. There are multiple methods of measuring pH. The most common method is a pH meter, which involves a pH-sensitive electrode (usually made of glass) and a reference electrode. Acid-base indicators change color in response to different pH values. Litmus paper and pH paper are used for quick, relatively imprecise measurements. These are strips of paper that have been treated with an indicator. A colorimeter may be used to measure the pH of a sample. A vial is filled with a specimen and a reagent is added to produce a pH-dependent color change. The color is compared against a chart or standard to determine the pH value. Extremely acidic and basic solutions may be encountered in laboratory situations. Mining is another example of a situation that may produce unusually acidic aqueous solutions. Special techniques must be used to measure extreme pH values below 2.5 and above around 10.5 because the Nernst law isn't accurate under these conditions when glass electrodes are used. Ionic strength variation affects electrode potentials. Special electrodes may be used, otherwise, it's important to remember pH measurements won't be as accurate as those taken in ordinary solutions.

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