

Bentonites and pH

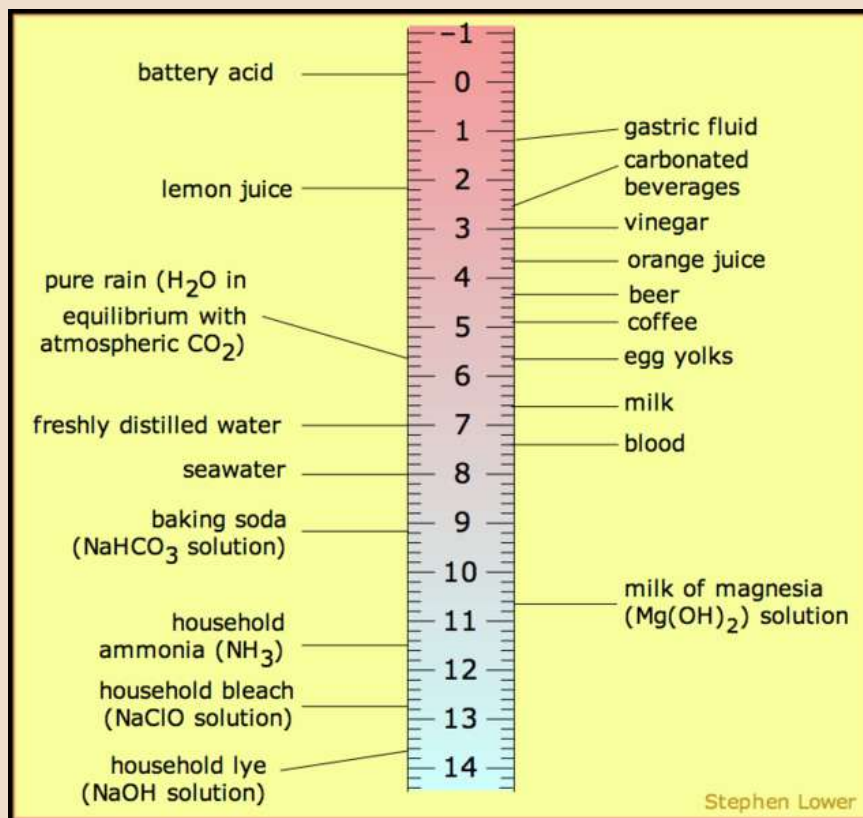
pH

All life-sustaining environments need water. And all processes containing water have a need for pH measurement. The reason pH is so important is that most living things depend on a proper pH level to sustain life. All human beings and animals rely on internal systems to maintain the pH level of their blood. It turns out the blood flowing through our veins must have a pH of between 7.35 and 7.45. This is a very narrow range! If your blood were above or below this range by as little as one-tenth of a pH unit, it could prove to be fatal.

The pH scale ranges from 0 to 14. It is a logarithmic scale, so each number is 10 times more alkaline than the preceding one. It measures the acidity or basicity of a solution. A pH of 7 means it is a neutral solution. Pure water has a pH of 7, and rain water is closer to 5.6. A pH of less than 7 means the solution is acidic. A pH of more than 7 means the solution is basic. It is important to understand pH when evaluating a clay mineral compound.

Food and pH

Crops such as wheat, corn, and all other edible vegetation will grow best if the soil they are planted in is maintained at an optimal pH. Today, most farmers are paying close attention to the pH value of their soils to manage crop health. But different crops need different pH levels. Different soils are suited to different plants at varying pH ranges. If the pH of the soil is not in balance, plants will suffer. Some thrive in pH ranges under 5 and others thrive in ranges of around 6. But very few plants do well in overly acidic or alkaline conditions. They prefer moderation and balance.



The Plant-Human Connection

The pH value of soil affects the health of the plant. This in turn can affect animal and human health. This is because the soil pH value directly affects nutrient availability to plants, and therefore to you. This is also why so many scientists are concerned about environmental pollution that creates atmospheric acids, creating acid rain.

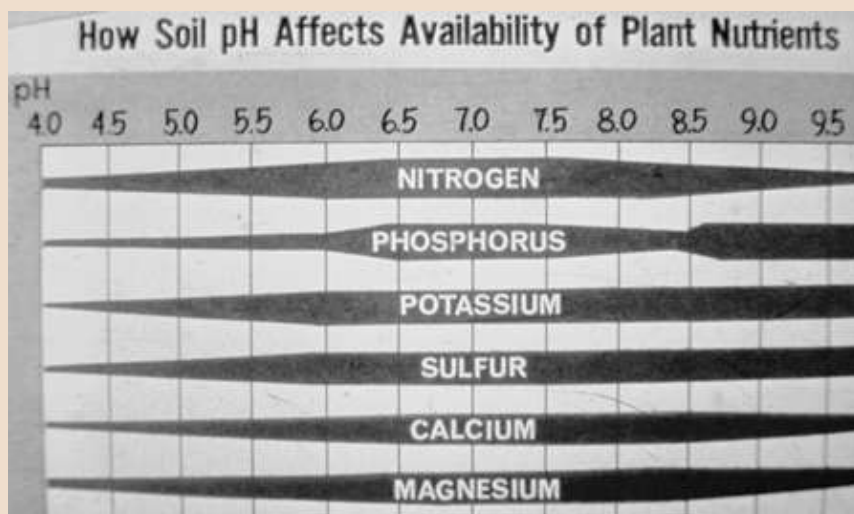
Moreover, the way the plant-root-soil process depends on pH for mineral uptake is just like the relationship of pH and a clay mineral complex within a person's body. We can learn a lot from soil science about how well the detoxification process occurs, and how the release of minerals from Montmorillonite/Bentonite is affected. The root-mineral relationship serves as a model for the intestine-mineral relationship.

pH and Nutrient Availability

The major impact that extremes in pH have on plant growth is related to the bioavailability of nutrients or the soil concentration of minerals. Nutrients for a healthy food chain are divided into three categories: primary (macro), secondary (Micro), and trace elements.

It turns out that Macronutrients are best utilized by the plants at a neutral or slightly base pH, while trace elements are more available at low pH's. The same effect is true for your body. Such pH-induced availability is not a function of the organism, such as the root or your intestines, but of the medium...the soil, or the clay itself. Soils contain small amounts of clays and other organic matter that act as buffers and delivery systems for minerals, as well as detoxifiers. The process is called "cation exchange". It is the ability of a soil to hold and release minerals on demand to a root. It is also the precise mechanism that allows Bentonite to release minerals into your body and absorb toxins from your body, whether in a bath, topical application, or from ingestion.

Think of pH as a critical part of any living system—such as your body. And an active clay mineral is also a system. It is a system of mineralization and detoxification. The beneficial interactions of the clay mineral system and your body-system are why we often refer to Calcium Montmorillonite as "living clay". Terramin® is the original "living clay" as described by famed nutritionist Neva Jensen.



This chart reveals that soils and clays should be in the neutral or somewhat base range for optimal ion exchange performance in soils, water and inside your body.

What About the pH of Foods?

Most foods have pH values in the neutral range. Even the most extremely alkalinizing foods are only 8.5 to 9.0 in pH. Clearly, we were not intended to ingest a lot of highly alkaline substances on a regular basis. A pH value approaching 10 is caustic and may not digest well. Moreover, as the chart above indicates, a pH higher than 8 means that some of the cationic elements (such as those in Bentonite) will not be as readily released. So while the substance may retain its ionic pull and will work for detoxification, it will not be a good nutrient source. This is especially true for Sodium Bentonite, which has a higher pH, but lacks much exchangeable calcium.

pH Tradeoff

That being said, with all the acid-forming foods we eat, taking alkaline substances... anything over 8 tends to provide a beneficial countermeasure. But the important question is not the acidity of the body, but what are the factors that cause it?

For example, if an infection such as Candida is causing the pH imbalance, it is wiser to cure the Candida, which will lead to a better pH, than to try to ingest a high pH substance and ignore the Candida.

Other good questions are:

What causes the high pH of a supplement?

Is it natural?

Is it due to a heavy metal that you shouldn't be overexposed to?

Is it due to the presence of too much sodium?

This is one reason we don't recommend Sodium Bentonite for ingestion.

It is also important to note that any Bentonite/ Montmorillonite at a pH of 8.0 or higher—whether in soil or water or inside your body, is a fully charged anion, capable of exchanging all of its cations. Once you exceed a pH of 8.0, you don't need higher alkalinity to activate the compound. And you are making the exchange more difficult.

Base saturation of a Bentonite-type soil

| Soil pH | % Base Saturation |
|---------|-------------------|
| 3.9 | 0 |
| 4.5 | 0 |
| 5.3 | 25 |
| 6.2 | 50 |
| 7.1 | 75 |
| 7.5 | 90 |
| 8.0 | 100 |

The Solution is Balance

What is needed is a balanced pH at a slightly base/alkaline level. We advise you to choose edible, bathing, or facial clay that has a moderate pH, so cations are exchanged across the full spectrum. If the clay is too alkaline, it may not release some minerals. If it is too acidic, it will not be able to adsorb some toxins. Moderation is the key!

Terramin®

Terramin® carries a pH of 8.3, and a strong cationic charge. We believe its pH, its mineral exchange capacity, and its detoxification properties are just right. It also contains a portfolio of 57 macro, micro and trace minerals needed to support strong bodies. Our mineral complex is 100% natural, extremely finely powdered and free of toxins, pathogens and allergens. Our research indicates that Terramin® is a rare, premium Montmorillonite, preferred by the world's most selective consumers.

We invite you to ask your dealer about this amazing active mineral system.