

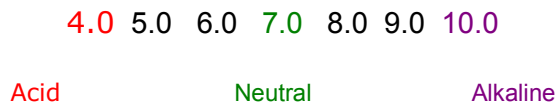
## How an Ionizer Works

### What is pH and ORP?

Ionization alters water in two measurable ways: pH and ORP.

#### [pH Fundamentals](#)

The pH stands for "potential hydrogen" (hydrogen is a gas that combines chemically with oxygen to form water). The pH is a measurement that provides an indication of the level of hydrogen in a substance. It is measured by the pH scale. The scale ranges from



If any substance changes from pH 7 to pH 8, it has become ten times more alkaline. Conversely, if it changes from neutral pH 7 to pH 6, it is 10 times more acidic. As an example, a popular Cola, at pH 2.5 is almost 50,000 times more acidic than neutral water, and needs 32 glasses of neutral (pH 7) water to counteract the consumption of one glass of Cola.

Our blood pH can be affected at any time of the day by a myriad of events; negatively by acid forming foods, drinks, stress, pollution, exercise, or beneficially, by meditation, alkaline water, deep breathing or even by being happy.

Proper body pH is an important factor in good health.

#### [ORP Fundamentals](#)

The other way an ionizer alters the water is in ORP. This stands for Oxidation Reduction Potential.

Oxidation is what turns an apple brown after it is cut or causes metal to rust. The brown color signifies the deterioration of the apple. Rust weakens metal. The process of oxidation "steals" electrons from the surface being oxidized. When we measure something's oxidizing potential, it is expressed in +ORP and measures the concentration of OH<sup>+</sup> ions or oxidizing agents.

ORP is a "potential" energy that is stored and ready to be put to work. It's not necessarily working, but we know that the energy is there and we can measure it. Another way to look at this potential might be to look at pressure. If you blow up a balloon, there is air pressure inside. As long as the balloon is closed, the pressure remains and can be measured. When released, this potential energy becomes kinetic energy.

In electrical terms, potential energy can be measured. When we use the term "potential" in describing ORP, we are actually talking about electrical potential as expressed in millivolts. This potential is measured in water with an ORP meter. What you measure is the very slight voltage in water. We are actually measuring the presence of either oxidizing agents or reducing agents by their specific electrical charge, thus Oxidation Reduction "Potential" ORP. High pH water (alkaline) has more "reducing" agents (-ORP)☺, while low pH water (acidic) has more oxidizing agents (+ORP) ☹.

A "reducing" agent is simply something that inhibits or slows the process of oxidation. That is a good thing. The "reducing" agent does this by "donating" an electron whereby oxidizing, "steals" an electron.

When we measure a something's Oxidation Reduction Potential (ORP), its ability to slow or stop the deterioration process, it is expressed in terms of -ORP. It measures the concentration of OH<sup>-</sup> ions or "reducing" agents. In its most basic form a "reducing" agent is an "antioxidant" - reducing oxidation. Thus the higher the -OH ion number in the measurement, the more oxidation reducing action is present.

The ORP of most tap water in the USA is between +200 to +600 millivolts. It is an oxidizing agent and environment for deterioration. Most bottled waters are very acidic (low pH) and also have higher ORPs (over +400millivolts).

High pH ionized water demonstrates a -ORP and so is a "reducing" agent or "antioxidant".

### [Crucial Variables in Performance of Ionizers](#)

The alteration of pH and ORP is highly variable and depends on 3 factors:

1. The natural mineral content of the water.
2. The voltage applied to the water during electrolysis.
3. The flow rate through the ionizer's water cell.

This is the criteria that an ionizer depends on and determines the quality and effectiveness of any ionizer.

1. Natural Mineral Content: An ionizer works on the mineral content in the water. It is the dissolved mineral content which creates the pathway for the "ionization" (or more correctly electrolysis) to occur. Water without mineral content, like reverse osmosis or distilled water, will not conduct the current, and therefore can not be "ionized". This first variable is the most crucial to performance. Tap waters vary widely in the dissolved mineral content. The higher the mineral content ("harder" water), the higher the levels of pH and ORP alteration an ionizer can achieve. The lower the mineral content ("softer water"), the lower levels the of pH and ORP alteration. The importance of this variable can not be emphasized enough.

The heart of an ionizer is the water cell which contains the electrodes. The electrodes are what deliver the current and creates the "ionization". We control the voltage conducted through the electrodes and then to the water by selecting the different "Alkaline" settings on an ionizer. The higher the Alkaline setting (or voltage), the more alteration you will achieve in pH and ORP.

2. Voltage Application: The primary determinant of effective delivery is the effective conductivity of the current or voltage into the water needed to create electrolysis. This effectiveness is not attained by larger electrodes, but rather by the type of conductivity. Jupiter states the larger electrodes have poorer conductivity – so they have to be larger. Larger sized electrodes does not mean better ionized water.

Jupiter Ionizers offer newer electrode technology. It provides the highest level of conductivity in ionizers. The cutting edge design and proven durability of electro-plated platinum electrodes ensures you get the best Oxidative Reduction Potential (ORP) alteration over longer periods of time.

An ionizer is an investment that you want to last. The electrodes are the crucial operating component in your ionizer. All other units on the market clean themselves using a simplistic "reverse polarity" system – which not only allows some scale buildup, but also prevents you from using your machine during its cleaning cycle. The Melody offers an automatic cleaning cycle to help prevent this. The Athena offers the patented new DARC (Double Automatic Reverse Cleaning) system. It completely eliminates the mineral scaling from collecting on the electrodes, ensuring you can enjoy many long years of use. The DARC system cleans *as you ionize* – so you never have to wait for a cleaning cycle to complete.

3. The Flow Rate: The Melody offers a flow control valve that allows you to fine tune its performance by giving you complete functional control of the water pressure moving through your ionizer. There are no gimmicks or additional circuitry, just the time tested advantages of true flow control, which also provides the possibility of alternate installation options. The Melody/Athena is one of the only ionizers that can be installed three (3) different ways : 1) At your sink with a diverter from the tap, 2) At your sink plumbed directly to your cold water line. There is no diverter *and* you can operate the Melody while running the hot water out of your tap, and 3) Undersink completely out of sight with a small dedicated faucet (optional undersink kit required).

The Jupiter Ionizer has been rated with a minimum ORP of -600 to -800 mv. depending on Ionizer model and the variables mentioned above. The combination of durability, performance and price is unmatched.