

# Q A frequently asked questions about Zeta Rod<sup>®</sup> systems



**What is a Zeta Rod<sup>®</sup> System and is it affordable?** The **Zeta Rod<sup>®</sup> green technology** offers a highly economical and environmentally sound method of water conditioning that uses the physical and electrochemical effects of electrostatic fields to disperse bacteria and nano-crystals that form biofilm and scale. A Zeta Rod system will normally pay for itself in chemical savings, water conservation and maintenance over a period of months rather than years.

**Why the name Zeta?** Zeta Corporation borrows its namesake from the term **zeta potential**, which is simply defined as the measurement of electrokinetic forces that cause suspended colloidal particles to repel each other. By increasing the zeta potential of suspended colloidal particles in fluids, they remain in suspension, rather than uniting to form hard scale or biological deposits. Visualize all the suspended particles in your water, each with its own force field. The Zeta Rod strengthens that field, causing particles to repel each other.

**How does a Zeta Rod system work?** The Zeta Rod forms a **capacitor** involving the sub-colloidal particles within the water, the piping, and the vessel walls. Within this capacitor, tiny particles that would otherwise become part of scale, sludge or bacterial deposits are electronically charged to the same sign. Behaving within the laws of physical chemistry, described as DLVO theory, having been charged to the same sign, they repel each other. Since the colloidal particles can't link together or stick to the vessel walls, they pass through the system without forming harmful deposits.

**Are chemicals used?** No chemicals, acids or other additives are required for a Zeta Rod system to create this capacitor.

**Will the Zeta Rod replace my water softener?** Yes, the Zeta Rod is often used as an alternative to water softeners, eliminating the need to store salts and re-generate media. The maintenance and space required by traditional salt-based water softeners is also eliminated. Because the Zeta Rod does not change the chemistry of the water, the water treated can be used for irrigation and drinking. The Zeta Rod is an ideal choice in areas where bans on salt-based softeners are in effect.

**Will the Zeta Rod purify my water?** No, a Zeta Rod system affects the physical behavior of water without adding anything to the water or removing anything from the water. The system acts as an electronic conditioner that in effect arrests the effects of hard water without the use of salts or other chemicals. It is not a purifier, however, if purified or filtered drinking water is desired, the Zeta Rod system will keep those filters or systems from fouling, thus enhancing their performance.

**Does the Zeta Rod cause corrosion?** No! In fact, one of the main uses for the Zeta Rod in industrial applications is for corrosion prevention. Because the Zeta Rod is a true capacitor, there is no electrical current flowing across the water. Other methods that pass actual electrical current through the water have the potential to cause corrosion by electrolysis.

**Will old deposits of scale and biofilm be removed?** The bond between old deposits and the surface will be dissolved, allowing existing deposits to fall away from pipe or vessel wall surfaces. The removal process is normally gentle and occurs over a period of time. If the deposit is sufficiently thick to cause a loss of heat transfer or flow

efficiency it should, if possible, be cleaned before start-up. We recommend starting with a clean system that will be kept clean by the Zeta Rod, but if this is not possible or convenient, there is no harm in installing the system on older piping.

**Will the Zeta Rod stop those spots from forming on my shower walls & bathroom fixtures?** As water droplets evaporate, they leave their salts behind. This is simply a fact of physics. Because the Zeta Rod does not add or remove anything from the water, spots created by evaporated salts may still form. However, because the Zeta Rod reduces the surface tension of the water, the crystallization behavior of those salts is altered, greatly reducing spotting and allowing them to be easily wiped away, leaving shower walls and bathroom fixtures as shiny as when they were installed. A Zeta Rod system will allow the user to back off significantly on the amount of soap used for laundry, dish washing, etc., while at the same time improving the performance of those appliances.

**What will happen if there are existing deposits in my pipes?** It is possible that the biofilm "glue" bonding old scale deposits to piping and tanks may lose its bonding, allowing old scale to be dislodged, rather than to dissolve slowly over time. It is also possible that some dislodged old scale deposits may become entrapped in shower heads or aerator screens in sink faucets. Simply open those screens and flush with water. Of course, new scale and biofilms are prevented from forming.

**Will the Zeta Rod keep my evaporative (swamp) cooler clean?** Yes, the Zeta Rod has been used for many years to keep industrial and commercial evaporative cooling equipment free of scale and biofouling without the use of any chemicals. Given the low volume of water in a swamp cooler, the constant make up with fresh treated water ensures that the cooling pads remain clean, distribution tubing and nozzles won't plug; and fan belts, motors and recirculation pumps last longer since there is no scale accumulation. Evaporated salts on the outsides of pads are easily rinsed off and in many cases allow for their use over many seasons without having to be replaced. The best part is that the swampy odors inside the home are eliminated because there is no bio-fouling of the water.

**Will the Zeta Rod protect my water heater?** Yes, if the Zeta Rod is installed upstream from the water heater, then the water going into the heater will be preconditioned and the heater will be protected against scale deposits.

**I have a reverse osmosis (RO) unit under my sink, will the Zeta Rod affect its performance?** The Zeta Rod will actually help your RO system perform better. Many industrial and municipal RO systems are being treated with the Zeta Rod to help reduce membrane fouling, increase membrane life span and improve the flux of the system (that is the amount of water produced at its normal operating pressure).

**The water where I live is very hard, will the Zeta Rod be able to protect my plumbing and fixtures?** Yes, the Zeta Rod has been used for many years protecting industrial evaporative cooling systems operating at with very high levels of hardness, it has also been used for many years in protecting heating and cooling equipment in sea water applications. One major international airport in Texas treats all of their domestic hot and cold water with the Zeta Rod. The result has been a dramatic decrease in maintenance costs to replace flush valves, seals and faucets in restrooms, as well as reduced effort required to keep these areas clean.

**How much electricity does the Zeta Rod® System use?** Because there is no continuous electrical current flow within a capacitive system, power use is almost too low to measure. A Zeta Rod® System costs about two cents a day to operate.

**Is there any maintenance required?** No, since there are no moving parts, or wear components, your Zeta Rod system should require no maintenance other than to check the status of the green Neon indicator lamp periodically.

**Is there any danger in being around the Zeta Rod system?** There is no danger of being around a properly installed Zeta Rod system. The system is completely insulated and unless the protective conduit, insulation or grounding wires have been damaged, there is no possibility of shock. While the voltage used to create the electrostatic field is very high, the available current is very low. The internal controls built into the power supply will instantly reduce the current output to near zero if the system ever shorts to ground. All Zeta Rod systems are IAPMO certified, assuring conformance to appropriate UL standards as well as to the Uniform Plumbing Code and

NSF/ANSI standard 61 for Drinking Water Systems Components - Health Effects. Because the Zeta Rod affects the way water behaves rather than adding or removing anything from it, assuming that the water is safe to drink to begin with, your water will remain safe to drink once treated.

**When should the Zeta Rod System be turned on?** Once properly installed and grounded, the Zeta Rod system may be turned on and should then **remain on at all times** in order to properly protect plumbing from deposits, scale, and biofilm. Other devices that attempt to cause scale to precipitate out of water, are flow dependant and will only operate when the water is flowing across them. The Zeta Rod's electrostatic field treats the water and protects the piping at all times, even when there is no water flowing. Because the field generated by the Zeta Rod extends both upstream and downstream from its point of installation, the plumbing system will be protected even during long periods of minimal water flow, such as during an extended absence from the home. This makes the Zeta Rod system an ideal choice for people who own homes that are lived in for only part of the year.

**How will I know if the Zeta Rod system is operating correctly?** The green neon lamp on the Zeta Rod power supply enclosure is not simply an on/off indicator, it is connected to the high voltage output of the system. As long as the green light is illuminated, the power supply is supplying its nominal voltage output and the integrity of the system is ensured.

**Are there any components that will have to be replaced as part of routine maintenance?** No, a Zeta Rod system is designed for a maintenance-free, long life. There are no filters or media to replace. Zeta Rod systems carry a three year limited warranty for parts and workmanship and most systems would be easily repaired for a nominal fee after the three year warranty period has expired. Zeta Corporation uses advanced materials and electronics in all of its products, with the expectation that they will last for many years of service. Since the electrode is not a sacrificial anode or cathode, there is no wear to the electrode; and since there is no measurable current being drawn from the power supply, the electronic components are rarely put through stresses that would cause failure.

**Is a Zeta Rod system easy to install?** The Zeta Rod is installed in the main water line coming into your home or building. While the installation of the system is relatively simple and straight forward, Zeta Corporation recommends that a licensed plumbing contractor perform the installation and if necessary, a licensed electrician provide an AC power source near the installation site.

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