

INSTRUCTION BOOK

Bioniser™ Eco - Oxidizer



www.bioniser.com

Please read before you call us for advice.

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Chemical-Free Pool Oxidizing System

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INTRODUCTION

PLEASE TAKE THE TIME TO READ THESE INSTRUCTIONS CAREFULLY AND NOTE HOW THEY APPLY TO YOUR PARTICULAR POOL AND EQUIPMENT.

Traditional pool maintenance has been to “shock” the water with chlorine... this process “oxidizes” contaminants that cause cloudy or dull water. With an Eco-Oxidizer attached, your pool is always healthy, fresh and clear without toxic substances polluting your swimming environment.

The Eco-Oxidizer goes to work whenever your pool pump and filter are running... it utilises a safe, low DC current that passes between two specially coated, long life titanium electrodes. This process oxidizes (eradicates) contaminants from your pool. As the unit consumes very little power it is a far better option than continuing to use harsh chemicals to regularly oxidize or shock your pool water.

Chloramines and other dangerous compounds formed when chlorine combines with organic matter such as skin or hair are destroyed on contact.

So... Now there is no requirement to “shock” your pool and the Eco-Oxidizer literally tells you that your pool water is out of balance. You can then check and rectify your Calcium Hardness, Phosphates or Total Alkalinity levels well before they reach critical imbalance levels because a cloudy pool that is fitted with an Eco-Oxidizer is really saying “Hey ! Check my balance levels !”.

Wishing that your pool would look sparkling clear is now a wish come true. Fitting an Eco-Oxidizer to your pool is the easiest way to get your wish... a fresh, clear and healthy pool without the chemicals and the fuss.

Unbalanced water is cloudy water

The Eco-Oxidizer is not able to clarify pool water that has become cloudy or opaque due to the water being out of balance. Leading causes of cloudiness in pools include high/low calcium, high/low total alkalinity, high phosphates and high Total Dissolved Solids (TDS). Test and rectify water balance levels if required before using the Eco-Oxidizer.

Ozone units operate in a quite similar way to the Eco-Oxidizer in that they are not designed to clear up pool water that has become cloudy due to incorrect balance levels including water that has high levels of TDS. (TDS should not be confused with salt levels which are sometimes expressed as TDS levels using pool shop tests that do not distinguish between the two.) The answer is to maintain correct water balance at all times so your pool remains free of that cloudy appearance due to unbalanced water.

Chlorine... A Sledge Hammer Approach

Chlorine is a man-made chemical and is not a natural solution to water control. It is a bleach and suppresses everything under most conditions if used in great enough quantity. Heavy use of chlorine can overcome water conditions such as high pH and even fairly high levels of phosphates. This gives the impression that pools work well under chlorine however the levels of chlorine required to maintain badly balanced pools creates unhealthy and hazardous swimming conditions. Not an optimum swimming environment. Please see the section “Eco-Oxidizer and Chlorine” on page 11 for further information on how the Eco-Oxidizer will save you and the planet if you plan to use a lower Hydrogen Peroxide or Chlorine level in your pool.

Optimum conditions are created when a Bioniser and Eco-Oxidizer are used in tandem and attention is paid to the maintenance and balance of the pool. These pool owners reap the rewards of a healthy and safe swimming environment. It saves them time, money, protects the environment and conserves water... after air, water is our most precious resource and necessary to all life on Earth.

INTRODUCTION

As with all Bioniser products, ensure that the pool water is correctly balanced before installing the Eco-Oxidizer. The Eco-Oxidizer can be safely used on new and existing pools.

Take note of the few “do’s and don’ts” and you will have a simple and trouble free start up.

Bioniser is committed to creating a more healthy environment... the Eco-Oxidizer is one integral component of our ongoing journey in this direction.

Our other products were also created to advance us all along the path back to a toxic free world. They include the fully digital Bioniser all natural pool and spa purifier, and also the amazing pH BOSS, totally automatic pool pH controller.

If you use a pool care service you can reduce the time they visit... they are now almost redundant. Let them visit once a month and sweep the pool, check the skimmer and you do no pool care whatsoever.

This is the Bioniser “Ultimate Solution” to Pool Care... and your commitment to help us all return to a toxic free Planet for your children to enjoy. This is the Bioniser promise to you.

Bioniser creates products that enhance our lives and protect us and the Planet. Our clients are our major focus and we do not rest until each individual client is happy with their Bioniser product and understands the Bioniser difference. The difference the Bioniser makes to pools is profound but the difference in operating parameters between other pool systems and the Bioniser System is small. There is no mystery and no “extra hassle” with our system...the real difference lays in the way your perspective around your pool and lifestyle will change.

- Got a pool problem?... call us.
- Need advice about anything at all?... call us.
- Want advice re the latest pool equipment?... call us.
- Want the best pool system available?... **CALL US.**

Bioniser designs and manufactures our own products...that is your safeguard right there.

Our famous 90 day “no questions asked” money back guarantee means you simply can't lose...

Winning designs, superior knowledge and exceptional service have created satisfied, happy and pool savvy clients who have all...

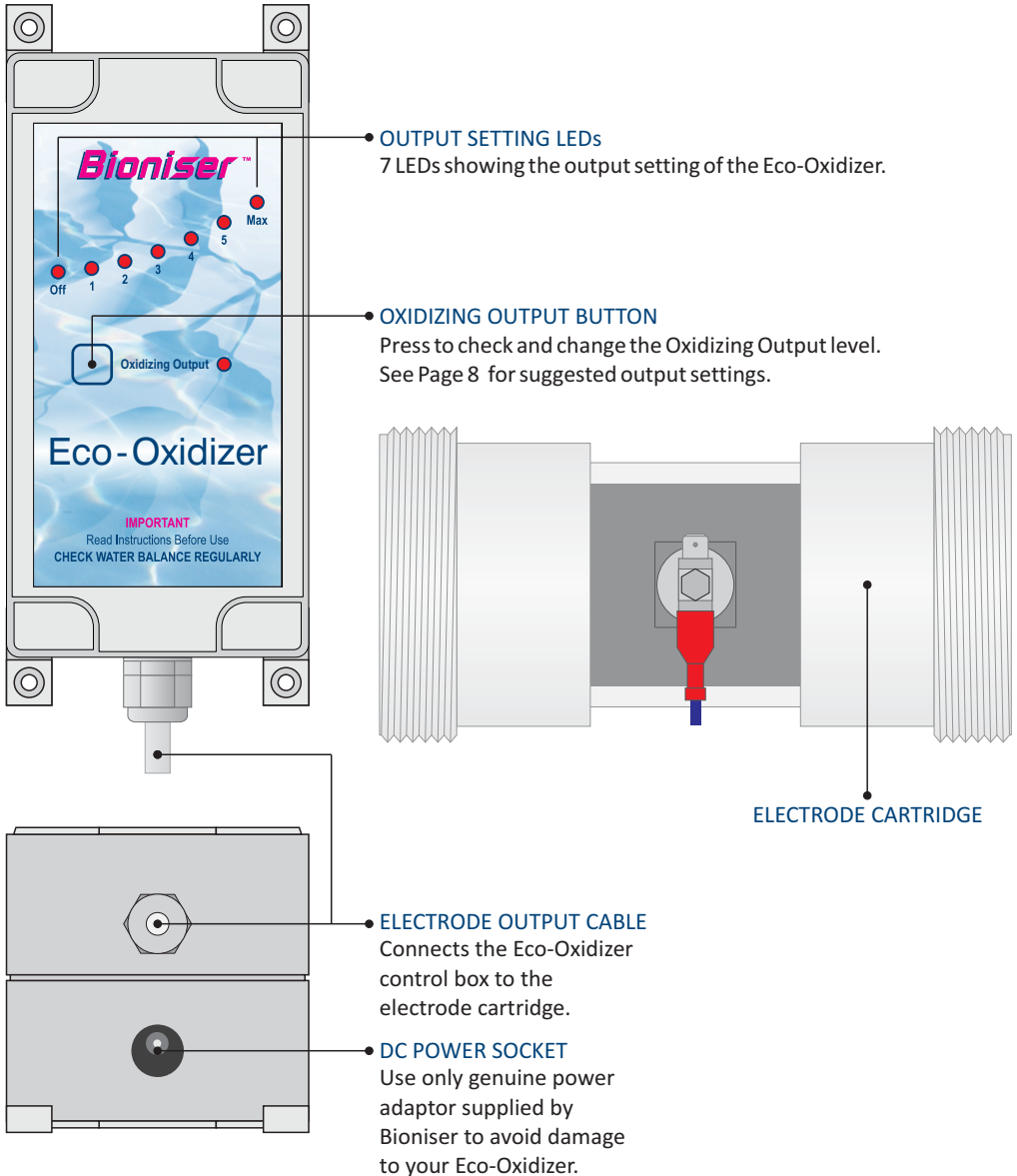
- reduced their power bills by an extra mile,
- reduced their maintenance time by hours per month,
- reduced their water waste by thousands of litres per year,
- reduced corrosion and rust of their pool equipment and pool surrounds to virtually zero,
- reduced their chemical and salt use by truckloads

The Pool owner who uses a Bioniser system does so because they have made a superior choice...for all the reasons above...and for the health and enjoyment of their families.

Try a Bioniser System or product on your swimming pool today,

...the risk is ours, not yours.

ECO-OXIDIZER ILLUSTRATION



SAFETY INSTRUCTIONS - READ

IMPORTANT :

It is important to follow basic safety precautions when installing and using this electrical equipment, including the following :

1. Ensure you read and follow all instructions.
2. **WARNING** - Do not allow children to use this product unless they are closely supervised at all times. This is to prevent accidental injury.
3. Keep all cables visible and do not bury them. Also, position them so that they do not get damaged by lawn mowers, hedge trimmers and other equipment.
4. **WARNING** - To prevent electrical shock, replace damaged cords immediately.
5. Read these instructions and keep the instruction manual in a safe place.

CAUTION :

Your warranty could become invalid should you fail to observe the following :

1. The Eco-Oxidizer must be installed and operated as specified.
2. The life of the unit will be extended (as with most other pool equipment) if it is placed indoors or in an enclosed structure.
3. Always power the Eco-Oxidizer from a genuine Bioniser power adaptor. An incorrect adaptor could damage the Eco-Oxidizer and will void your warranty.

ECO-OXIDIZER INSTALLATION

The Eco-Oxidizer can be installed onto a new pool or an existing pool with minimal pool preparation. Ensure that the pool is clean and correctly balanced.

See Initial Operation section on page 9.

1. Installing your Eco-Oxidizer takes around 30 minutes.
2. Alternatively engage a competent person to do the job.

3. If installing it yourself you will need :

- PVC pressure glue and primer.
- A fine tooth saw.
- Philips Screwdriver
- For masonry walls : hammer drill with 6mm or 1/4" masonry bit.
- Sandpaper or small file.

CONTROL BOX INSTALLATION

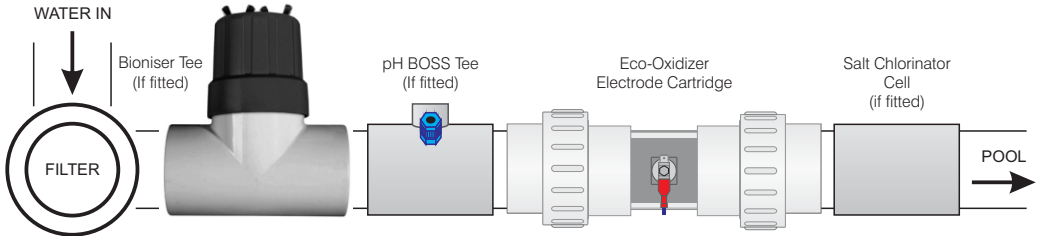
1. Choose a position that will allow you to see the Eco-Oxidizer LED readout easily. Fix the control box in position using screws at each corner of the box. Ensure that the Eco-Oxidizer is positioned near enough to a power outlet and to the Electrode Cartridge so the cables reach without straining.
2. Make sure that the unit is undercover to avoid UV damage from long term exposure to sunlight.
3. Plug the power adaptor into a suitable power outlet. The Eco-Oxidizer should only be powered on when the pool pump is running. This can be done in several ways :
 - 1) For new version Bioniser with 12V DC outputs sockets, use the adaptor cable to connect the Eco-Oxidizer to the Bioniser.

- 2) For earlier Bioniser or other systems with a pool pump power outlet, plug the power adaptor into the outlet provided. Use a double adaptor if necessary.
- 3) Use a separate timer switch, which has been tuned to the same times as the timer controlling the pool pump.
5. Connect the low voltage plug to the Eco-Oxidizer DC Power Socket (see Page 5). Use only a genuine Bioniser power adaptor. An incorrect adaptor could damage your Eco-Oxidizer and void your warranty.

DO NOT SWITCH THE POWER ON UNTIL INSTALLATION HAS BEEN COMPLETED.

ELECTRODE CARTRIDGE LOCATION

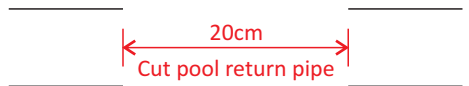
- The Electrode Cartridge must be fitted on the pipe that sends water back to the pool after it has been filtered (the "Return Line").
- If a Bioniser and/or pH BOSS are installed, fit the Eco-Oxidizer cartridge tee AFTER the Bioniser and pH BOSS Tees. The acid from the pH BOSS will help to keep the Eco-Oxidizer electrodes clean.
- If a Salt Chlorinator is installed, fit the Eco-Oxidizer cartridge BEFORE the Salt Chlorinator cell.
- If a liquid Chlorine injection system is fitted, install the Eco-Oxidizer cartridge BEFORE the Chlorine injection point.
- The Electrode Cartridge may be installed horizontally or vertically, where there is sufficient space to fit it.



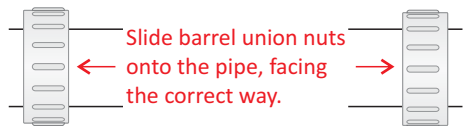
ELECTRODE CARTRIDGE INSTALLATION

1. Cut out a 20cm section of pipe sufficient for the Electrode Cartridge and barrel unions.

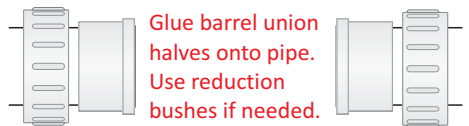
NOTE: The section that is cut out of the pipe should be about 60mm shorter than the cartridge with both unions fitted.



2. Slide the barrel union nuts onto the pipe. Ensure that the threads are facing the correct way, so that the nuts can be screwed onto the Electrode Cartridge at the last stage of installation.

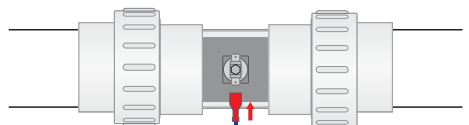


3. Glue the barrel union halves onto the pipe. If the barrel union inner diameter is larger than the pipe then use the 50mm to 40mm reducing bushes provided by glueing them in place into the barrel union halves before fitting.



4. Fit the Electrode Cartridge into place and secure the barrel union nuts. Hand tighten only - do not use a tool.

Push the cable connectors onto the spade connections on each side of the Cartridge. Spare spade connections are provided for commercial installations with multiple cartridges.



Fit Electrode Cartridge and tighten barrel union nuts. Push electrical connector onto terminals on each side of cartridge.

PROGRAMMING YOUR ECO-OXIDIZER

The only setting on the Eco-Oxidizer that ever needs to be changed is the Oxidizing Output level. This is a setting of how much oxidizing power is applied across the two electrodes.

To change the output setting :

- Press the **Oxidizing Power** button repeatedly until the desired setting is shown with the LEDs.
- After 3 seconds, the Eco-Oxidizer will beep, save the new setting, and return to normal operation.

Suggested output settings :

OffOxidizing Output is switched off and will not operate.

1200 mA, suitable for up to 30,000L Pool Size

2275 mA, suitable for up to 60,000L Pool Size

3350 mA, suitable for up to 90,000L Pool Size

4450 mA, suitable for up to 150,000L Pool Size

5600 mA, suitable for up to 200,000L Pool Size

Max750 mA, suitable for up to 250,000L Pool Size

Notes regarding output settings:

- The pool sizes listed are an approximate guide only, and can vary with factors such as :
 - Pool loading: The number of bathers in the pool compared to pool size. For example, a 35,000L plunge pool with 10 bathers has a much higher load than a 100,000L pool with 1 bather.
 - Water temperature: A heated pool would require a higher setting than a pool with colder water.
 - Location: A pool in a cooler climate area will require a lower output setting than a pool in a tropical climate. High rainfall would also require a higher output setting.

How to find the optimum setting for your pool:

When the Eco-Oxidizer is first installed, select the setting as per the information in the “Suggested output settings” section.

Visually check your pool daily. If the water becomes dull or cloudy instead of crystal clear, increase the setting by one level. Recheck a day or two later.

When a pool is over-oxidized the main visual effect is the presence of too many tiny bubbles in the water, which can look like cloudiness. If your pool has this effect, reduce the setting by one level. Recheck a day or two later.

INITIAL START-UP OPERATION

PLEASE READ THIS IMPORTANT INFORMATION BEFORE OPERATING YOUR ECO-OXIDIZER.

BEFORE OPERATING THE ECO-OXIDIZER :

1. Balance the Pool according to the Pool Balance information below. This is also shown on the Snap Pool Balance chart supplied with the Eco-Oxidizer. Feel free to take that chart to your pool shop if you prefer them to test your water.
2. It is not advised to use skimmer basket type clarifying cubes that treat Total Dissolved Solids (TDS) and Phosphates when operating the Eco-Oxidizer.
3. Operate the Eco-Oxidizer on a low setting initially (as per Suggested Output Settings on page 8). The unit will condition the pool water correctly during the next 3 to 7 days under normal filtering times of 4 to 8 hours per day, depending on pool size.
4. Backwash your filter if it is a sand filter, or wash your filter if it is a cartridge type filter. Refer to your filter's handbook.

NORMAL OPERATION

1. Set the Oxidizing Output level to **Off** 2 to 3 hours before adding any phosphate removers, flocculants, clarifiers or waterline scum detergents or the like. (See Suggested Output Settings, page 8).
2. Do not change the Oxidizing Output level away from the **Off** position again for 72 hours after adding any of the products listed above.
3. If the pool water becomes cloudy at any time we suggest testing the various pool balance levels and re-balancing the pool water according to the Pool Balance information below. This is also shown on the Snap Pool Balance chart supplied with the Eco-Oxidizer. Feel free to take that chart to your pool shop if you prefer them to test your water.
4. Check the pressure gauge attached to your filter regularly. If the pressure is more than 50kPa above the clean running pressure, then the filter must be cleaned. Sand filters must be backwashed, and cartridge filters must be disassembled, washed with water, and reassembled. Refer to your filter's handbook.
5. To depend on the Eco-Oxidizer to remove the cloudiness and restore clarity before testing the water balance levels is asking the Oxidizing unit to fix a problem that only has one solution. Correct water balance and efficient filtering with a clean filter will restore clarity...if this does not clarify the pool water then it is most likely requiring more oxidation.

To put it more simply... if the filter is operating normally, with no heavy bather load upsetting the water clarity, then any cloudy or hazy appearance in the water is most likely due to the pool water becoming being unbalanced.

MAINTENANCE

A LITTLE MAINTENANCE WILL HELP YOU GET THE MOST FROM YOUR ECO-OXIDIZER

The Eco-Oxidizer features a self-cleaning system for the electrodes. However, periodic cleaning in acid may still be required, especially when used in marble sheen pools with higher calcium hardness levels than usual.

Cleaning is recommended every 12 months, or earlier if excessive white calcium build-up can be seen on the electrode surfaces.

If all 7 LEDs on the Eco-Oxidizer's front panel are flashing, this could also indicate that cleaning is required.

For installations where a pH BOSS is installed in the same pipeline (as per INSTALLATION section), the acid will often eliminate the need for cleaning entirely.

Cleaning Procedure

- Prepare a bucket of diluted pool acid. We recommend to use a standard 10 Litre bucket. Fill with around 4 Litres of water FIRST, then add around 0.5 Litres of pool acid. ALWAYS ADD ACID TO A LARGER VOLUME OF WATER. NEVER ADD WATER TO ACID.

- Unscrew the two barrel union nuts. Hold the Electrode Cartridge in place to ensure that it does not drop onto the ground when removing the barrel union nuts.
- Place the Electrode Cartridge into the diluted acid for 15 to 30 minutes, or until the deposits have been visibly dissolved off.
- Remove the Electrode Cartridge from the cleaning solution and RINSE ALL OUTSIDE SURFACES WELL WITH FRESH WATER. The diluted acid will not affect the electrical connections as long as the Electrode Cartridge is rinsed well.
- To dispose of the used diluted acid cleaning solution, simply tip the bucket into the pool. Rinse the bucket well with fresh water.
- Re-install the Electrode Cartridge as per the INSTALLATION section.

TROUBLESHOOTING

CHECK THIS SECTION BEFORE CALLING OR SENDING YOUR ECO-OXIDIZER FOR SERVICE.

Symptom	Possible Causes and Remedies
All LEDs on the front panel are flashing	<p>Electrodes have accumulated a coating which prevents adequate electrical current from flowing between them.</p> <ul style="list-style-type: none">• Clean the electrodes, as per the MAINTENANCE section. <p>Faulty electrical connection to electrodes.</p> <ul style="list-style-type: none">• Check the cable from the Eco-Oxidizer control box to the Electrode Cartridge. Ensure that the electrical connections at the Electrode Cartridge are clean, tight and without excessive corrosion.• Faulty connections can be repaired by persons with technical experience, or can be returned to Bioniser for repair.
Unit does not power up	<p>Faulty AC/DC power adaptor</p> <ul style="list-style-type: none">• Replace power adaptor. Please contact your distributor or Bioniser.• Faulty Eco-Oxidizer main unit. Return to Bioniser for repair.

ECO-OXIDIZER AND CHLORINE

The advantage of the Eco-Oxidizer, when used in pool systems which also employ Chlorine sanitiser.

When Chlorine reacts with molecules that contain Ammonia and other nitrogen compounds (found in urine and other pollutants), it can form compounds such as Chloramine. These undesirable compounds are the cause of red eyes, itchy skin, and Chloramine is responsible for the "Chlorine smell" when people often (incorrectly) assume there is too much Chlorine in the pool.

The formation of Chloramines happens even more readily at low Chlorine concentration, because the level of "good" Chlorine (hyperchlorous acid) is too low to oxidize them away.

These compounds can be oxidized back to Hypochlorous acid (the desirable form of Chlorine) and gaseous Ammonia by break point chlorination. This is simply the addition of enough Chlorine to achieve around 10ppM Chlorine.

Whilst this method is effective, it has its own problems. Firstly, it can take some days for the Chlorine to return to a concentration that is safe for swimming. It also adds to the hazards of large volumes of dangerous chemicals being transported and used in and around swimming and spa pools. Thirdly, the high Chlorine concentration can damage pool equipment such as pool cleaners, and stainless steel ladders and other fittings.

The Eco-Oxidizer will oxidize Chloramines and other undesirable compounds using electrical current instead of high Chlorine concentration. The Oxidizing output is active continuously when there is water flow through the return-to-pool pipeline, after the filter. In this way, the undesirable compounds will be oxidized as they are formed in the pool, so they are not able to increase to a concentration that is noticeable or harmful to humans.

When used in this way, the Eco-Oxidizer can be used not just as a Chlorine replacement device, but also as a complimentary product to allow the pool operator to maintain very low chlorine levels (0.2 to 0.5ppM), without causing undesirable Chloramine build-up.

Testing in swimming pools has shown safe, healthy water with no combined Chlorine during hot summer conditions, whilst maintaining under 0.5 ppM of Chlorine. The tests showed a vastly reduced Chlorine usage. Pool balance was easier to maintain, with buffer and acid usage also reduced.

The most important result, is that the bathers in the test pools were not subjected to unnecessarily high levels of chemical while swimming.

Snapp Pool Balance

<u>Water Balance Tests</u>	<u>Required Range</u>	<u>Treatment Product</u>	<u>Period</u>
1. pH	7.0 to 7.4 pH	Hydrochloric Acid (50mL / 10,000L / pH 0.1)	Weekly
2. Copper Ions (Cu²⁺)	0.5 to 0.7 ppm	Bioniser Program Settings (Turn output % Up or Dn)	Weekly
3. Total Alkalinity (TA)	80 to 120 ppm	Buffer / Soda Bi-Carb (200gm / 10,000L / 10ppm)	Monthly
4. Phosphates	< 0.5 ppm	Starver / Phosphate Remover (100mL / 10,000L / treatment)	Monthly
5. Calcium Hardness	200 to 250 ppm	Hardner / Calcium Chloride (100gm / 10,000L / 10ppm)	Monthly
6. Total Dissolved Solids (TDS)	< 1000 ppm	Clarify with Polysheen Plus (or another Cationic based clarifier)	Quarterly

Note: Strengths of chemicals may vary from packet to packet.

Please check instructions on the label of each product and add the units required to match the volume of your pool.

Your pool will sparkle & feel healthier than ever before!

Bioniser

Chlorine Free Pool & Spa Systems