CDP - P02P Solar Pool Ionizer Using Silver and Copper Anode

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User Guide

HOW DOES A POOL IONIZER WORK?

Pool ionizers and ionization systems, in general, work by understanding that silver is a bactericide and copper is an algaecide. Copper and silver electrodes add traces of these elements to the pool through electrolysis, applying a low and safe voltage through the electrodes.

An article by the **World Health Organization** shows that the ionization of silver and copper provides a high level of protection in water, decreasing the need to apply high concentrations of chlorine or other oxidants

- **SOURCE: Article by the World Health Organization:**

Technical limitations of ionizers: Ionizers do not have the capacity to oxidize pool water like other chemicals such as chlorine. This is an obvious problem for anyone who wants to rely solely on an ionizer. You need to regularly oxidize pool water to burn organic waste. This means that if you use an ionizer, you must supplement it with a chemical oxidant in low doses.

Advantages of copper and silver ionizers: Silver can kill bacteria as identified in the WHO article, and has been used as a water purification method for centuries. Copper is an algaecide widely used in the pool industry and very effective in controlling the growth of algae in the water. Keeping copper levels between 0.2 and 0.4 will prevent algae from forming. The copper and silver in the pool water do not produce a taste or scent that can be detectable by people. Ionizers work with very few maintenance requirements, solely needing cleansing and replacing electrodes.

The combined use of the ionizer with low levels of chlorine (0.5 ppm – 0.8 ppm) is the most efficient and least aggressive method for disinfecting and maintaining swimming pools. Only the periodic monitoring of copper levels is required to prevent stains if copper densities above 0.9pp are reached, but it is the ideal solution if you want a **purification and filtration pool system that uses the least possible amount of chemical oxidant disinfectants**. The use of ionizers with saline chlorinators are also an optimal combination, since the salt system provides chlorine, tending to raise the pH of the pool. Silver and copper are very effective at disinfecting at high pH levels, unlike chlorine which loses its effectiveness.

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BENEFITS

1. Reduces the use of chlorine and other disinfectant chemicals by 80% - 95%
2. A single solar ionizer serves pools with a volume of up to 150 m^3 or 32,000 gallons.
3. 100% powered by solar energy, which provides savings in energy costs. In addition, since it has a low current voltage, it is completely safe for users.
4. Minimal installation and maintenance. Very easy to use.
5. Copper and silver mineral ions are 100% natural, healthy for our body and safe for the environment.
6. Eliminates, by anode capture, harmful minerals such as calcium and iron.
7. The pH level will remain stable at optimal levels without variations.

Effects of the combined use of the ionizer with low doses of chlorine in pool water:

Test report By Pony Testing International Group – YQ-P001

Tratamiento convencional con cloro Con Ionizador solar

Test Item	Swimming Pool before Treatment	Swimming Pool after Treatment
Total Coli form Group, MPN/100 ml	9.2×10^6	<2
Total Number of Bacterial Colony, CFU/ml	1.3×10^6	125
Copper, mg/L	**0.008**	**0.942**
pH	7.82	7.14
Temperature, ℃	21	21
Total Alkalinity as (Calcium Carbonate), mg/L	105	85.0
Free Residual Chlorine, mg/L	**<0.53**	**<0.05**
Cah (Calcium Carbonate), mg/L	133	124

From the report , you will find the pool copper ion increase from 0.008ppm to 0.942ppm , and the chlorine ion reduce from 0.53ppm to 0.05ppm after using the solar pool ionizer .

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IMPORTANT INSTRUCTIONS FOR USE

- To reduce the risk of injury, do not allow children to use this product.
- This product has been designed for the sole purpose of being used as a pool water purifier/ionizer, as described in this manual; the warranty will be void if it is used for any other purpose or if any modification is made to it.
- Do not use the unit if it is damaged.
- The unit should float over pool water with exposure to sunlight; otherwise, the warranty shall be void.
- This unit should not be used in swimming pools where disinfectants with biguanide are used (Biguanides are active ingredients with a broad-spectrum disinfectant formula with high bactericidal, fungicide and sporicidal efficacy).
- Save these instructions for future reference.

ACCESSORIES AND ASSEMBLY

			
Anode/ Mineral electrode	Brush	Strips to test the copper level	Sediment collection basket and clamping bolts

Open the package and take out the contents. Remember to check inside the box for loose parts. Read all instructions before assembly:

1. Inspect the solar panel.
2. Place the unit upside down on a smooth padded surface so as not to damage the plates.
3. With one hand, hold the spring electrode by pressing it down, to keep it retracted and avoid interference.
4. Screw one end of the mineral electrode, clockwise, into the silver screw stem located inside the winding electrode in the center of the unit.
5. Press with your hand, and turn it another quarter after you make contact with the black rubber joint at the base.
6. Place the protective basket on the end of the mineral electrode.

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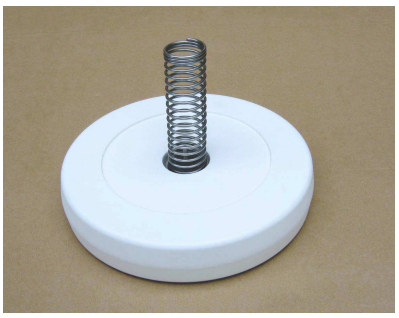
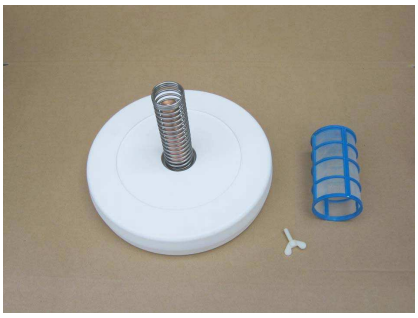
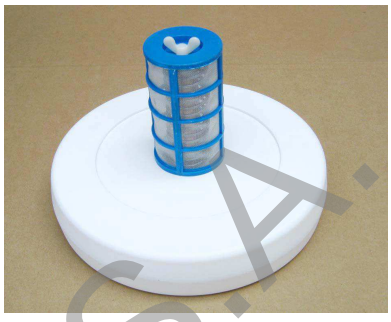
7. Place the protective basket over the electrodes and align the holes so that the plastic bolt can be screwed over the end of the mineral electrode.
8. Screw the plastic bolt into the electrode, clockwise, and tighten it. Do not tighten it excessively because the screw is plastic and could detach or break.



Unit with spring



Unit with spring and anode



IMPORTANT USAGE RECOMMENDATIONS

- Make sure the copper electrode is screwed firmly in contact with the rubber joint, or the external spring will be energized by the electrode and eventually get damaged over time.
- Use the copper level test strips to analyze the copper ion level of the pool every week. If it exceeds the 0.9ppm level, remove the ionizer from the pool until the level is reduced below 0.5 ppm or else the water will become murky and green. Place it back when the level is less than 0.5 ppm In pools of more than 30 m^3 it is difficult to exceed the indicated optimal copper levels.
- Make sure the solar panel can pick up as much sunlight as possible and keep the surface clean. The device needs a minimum of 4-6 hours of exposure to solar radiation.
- You must keep the chemical parameters of the water balanced correctly for the ionizer to work, **especially the pH level equal to or above 7.2**, because the anode will deteriorate rapidly in the case of acidic water. This deterioration can be detected because the equipment leaves a coppery trace (of copper dust) around it. Under normal conditions of use, the ionizer should generate bubbles on the spring and a soft bluish cloud.

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Water chemistry equilibrium with an ionizer:

Chlorine: 0.5 ppm – 0.8 ppm

Alkalinity: 80 ppm to 120 ppm

pH: 7.2 a 7.6

Hardness:
Calcium: 200 ppm to 300 ppm; no higher than 500 ppm
Total dissolved solids (TDS): 500 ppm to 1,000 ppm

NOTE: If your water is hard with high calcium levels, you may need to remove the calcium deposits trapped by ionizer electrodes more often. Incrustations are created in the anode where lime and other residues trapped by the ionizer during the electrolysis process adhere. In this case, we recommend weekly cleanings.

- In case of more than 3-5 cloudy days with low solar intensity, add algaecide or chlorine in the pool, since the ionizer will lose performance power.
- The spring is permanently installed and cannot be removed. Do not attempt to remove it in any way because it could damage the unit irreversibly.
- Keep the original box and instructions to store the product safely and conveniently when not in use.
- Check the chemical composition of the water with a suitable tester. Maintain a chlorine concentration of 1-3 ppm (parts per million) and a pH of 7.2-7.8. If necessary, you can add chlorine in the initial phase.
- Keep the water clear, if the water is a little cloudy, it may be necessary to apply a "shock" dose of oxidant/chlorine.
- Check for the presence of copper ions in the water with the copper test strips (see the ION TESTING section). At this point, the typical reading is between zero and a low figure (0.0 - 0.1 ppm.). If higher concentrations are detected (usually because of the previous addition of copper-based algaecides), follow the instructions in the ION TESTING section, until the level drops.
- Place the Solar Ionizer in the pool and let it float; make sure it receives sunlight directly. If necessary, tie it in the sunniest area of the pool, preferably near a water jet so they spread the generated ions more quickly in the water.
- Turn on the pump and filter during the day, preferably while the Solar Ionizer generates ions. This will allow the optimum mixing and circulation of minerals more quickly. The unit may be in the water permanently unless the recommended ion concentration of 0.5 ppm is exceeded.

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ION TESTING

The mineral electrode is made of a special alloy of various metals, predominantly copper and silver. The ion test strips detect the presence of the copper ion, which indicates whether the water has an adequate level of protective minerals. The reagents that come in the set are very sensitive, and the readings can be affected by various interference factors. For this reason, use the ion test as a basic and general indicator. Take the test only once a week; you don't need to do it more often.

1. Read the test strip instructions.
2. Perform the test weekly. It should show an increasing concentration. Once the reading indicates 0.5., you should start reducing the chlorine concentration
3. If the ion reading reaches 0.9. or more, remove the unit from the water for a week and monitor the ion level weekly. This situation is unlikely in pools with a capacity greater than 30 m^3
4. When the ion level decreases below 0.5., put the unit back into the pool and perform an ion control once a week.
5. If the ion level is maintained at 0.5., continue the regular flotation program.

The goal of the ion test is to first determine whether the chlorine level can be safely reduced and then to establish the solar ionization program that maintains a stable ion reading level of approximately 0.3 ppm Depending on conditions, pools of 30 m^3 or more usually require the full time use of the **CDP - P02P solar ionizer**. Smaller pools usually maintain an adequate ion level with a temporary use. For example, one day yes and one day no, 2 days in a row and the third are no, one week yes and the other no, etc. In indoor pools, it might be necessary to use the **CDP - P02P solar ionizer** constantly, because the generation of ions will be approximately half the generation with normal sunlight.

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STARTUP: THE FIRST WEEKS

The **CDP - P02P solar ionizer** protects your pool against microorganisms by providing the water with mineral properties that make it harmless from a biological point of view, as well as resistant to the formation of algae. The **CDP - P02P solar ionizer** works effectively as a slow charger that generates ions from sunlight using low-voltage electricity generated by the plates. This process is called electrolysis ionization. Depending on the volume of water, weather conditions and use, there is an initial period of 1 to 2 weeks until the optimal level of protection by ionization is reached. Therefore, it is important to maintain a regular disinfectant level during this initial phase, until the ion concentration reaches a sufficient level of protection

During this period, you should see the ion level drop to about 0.5. Use **CDP - P02P solar ionizer** on a daily basis and do not decrease flotation time unless levels tend to rise excessively. Remember that a higher number of ions does not mean it is a better situation. Water has the ability to retain only a certain amount of minerals, and attempting to exceed the saturation point can result in minerals being deposited on pool surfaces. It is important to spend a few minutes each week checking the ion level and cleaning the electrodes (see the 'CLEANING THE ELECTRODES' section).

1. Once you have reached the recommended ion level of 0.5., start reducing the amount of chlorine, letting the chlorine concentration drop to half the normal level, or about 0.9.
2. **It is imperative that the pH level remain in a range of 7.2 - 7.8**. Mineral ionizers work best with higher pH values, so you should not attempt to arbitrarily adjust the pH if it is within the recommended limits. In general, use the **CDP - P02P solar ionizer** while maintaining an adequate ion level, and to determine how much chlorine needs to be added to maintain water clarity. Let the water settle and reach its own balance.
3. **Clean the electrodes once a week**, or as needed. If your water is hard with high calcium levels, you may need to remove calcium deposits trapped by the ionizer electrodes more often, as incrustations will be created by lime and other residues trapped by the ionizer during the electrolysis process. Weekly cleanings are recommended in this case.

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CLEANING ELECTRODES

The **CDP - P02P solar ionizer** is the only purifier that, in addition to generating beneficial mineral ions, absorbs unwanted minerals such as calcium and iron. As a result, this softens the water. The fungible mineral electrode is designed to erode slowly, and during this process a layer of tartar/incrustation accumulates and must be removed periodically. In addition, tartar can also be accumulated in the spring electrode, which must be cleaned. The formation of the tartar layer will be greater at first, with the hard water, and will decrease as the water softens. It is ideal to clean the electrodes once a week. Excessive accumulation of tartar-incrustation can restrict electrical flow and lessen the ionization process.

1. Place the unit face down, preferably on the lawn or a soft surface so as not to damage the solar panels.
2. With a garden hose, direct a strong jet of water from different directions, to detach all loose material and embedded tartar.
3. Lower the jet pressure and let water run over the electrodes. Remove any remaining residue with a brush.

AND/OR

1. As water runs over the electrodes, slide the spring up and down, while making contact with the central electrode from various directions. Waste will be washed away with the water.

NOTE 1: It is not necessary to wash the electrode from the center until it is in the bare metal, although it is relatively easy to clean. If most of the tartar is removed, it will work according to your specifications. The electrodes can be cleaned as frequently as desired. The cleaner they are, the more efficient the **CDP - P02P Solar Ionizer**.

NOTE 2: The acid solution can also be used to clean the electrodes. Place the unit over the container with the electrodes submerged and remove it when no more bubbles are visible. Do not leave the electrodes submerged for more than a few minutes.

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MAINTENANCE

It's important to spend a few minutes each week monitoring the chemistry of your pool water, cleaning the unit, and familiarizing yourself with its developments. After a couple of months, you should know the amount of chlorine or oxidant that is needed, the flotation time, as well as determine how often you should clean the electrodes, etc.

The **CDP - P02P solar ionizer** works well with traces of chlorine or any other oxidant of your choice. It is not necessary to use algaecides, conditioners, clarifiers, etc. The chlorine level should be increased when you increase the water temperature, the number of bathers, the amount of rain or when more water is added. If you use liquid chlorine, release it at sunset, or later, because the sun's rays quickly neutralize the chlorine. Recommended levels are not absolute values and may vary depending on weather conditions. Experience dictates the best choice for your pool. Let the water reach its own equilibrium. Do not arbitrarily change the pH of the water or try to alter the water if it looks perfectly clear. Allow the time necessary for your pool to stabilize, and remember: more is not necessarily better.

CHANGING ELECTRODES

The mineral electrode is designed to disintegrate slowly. As a rule, the electrode wears out after 12 to 24 months, depending on conditions, and needs to be replaced. This can be seen because the electrode will be very thin or will be almost ¼ of an inch thick at its thinnest. To remove the worn electrode:

1. While pressing the spring electrode with one hand, turn the center electrode counterclockwise. If necessary, pry with pliers.
2. Keep unscrewing it until you take it out.

The installation procedure is performed in reverse order; read more about this in the STARTUP section.

NOTE 3: Always place the same end of the electrode in the direction of the floater. Do not shift the ends when removing and repositioning the electrode.

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ASSEMBLY

You can remove the **CDP - P02P solar ionizer** in winter cycles with the pool covered. Your pool water should remain clean for months if you prepare it properly:

1. Maintain an ion level of 0.5 - 0.9. Mineralized water will be protected against the proliferation of algae.
2. Ions work as algaecide, so you don't need to use anything else for this purpose.
3. Turn off all equipment, including pumps, chlorine dispensers, etc.
4. If the water is clear, you do not need to add oxidant. If it is a little cloudy, add chlorine/oxidant.
5. Remove the solar ionizer.
6. If desired, empty the pool, condition the pumps for the winter, cover them, etc.
7. Remove and clean the electrode from the unit and store it in a tightly closed plastic container or bag.
8. Store the **CDP - P02P solar ionizer** indoors and do not let it freeze.

If you close the pool with insufficient ion levels, or if extreme conditions occur during the season, the water may become somewhat cloudy. When you use it again:

1. Replenish the maximum water level, clean the surface layer.
2. Add chlorine to remove any turbidity, if any.
3. Check the ion level. The unit should float and reach a concentration of 0.5.
4. If the ion level is less than 0.5, temporarily add more chlorine as a protective measure.
5. Keep the amount of oxidant needed to keep the water clear.
6. Verify that the pH is between 7.2 and 7.8. Correct it if necessary.

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OPERATING TESTS

It is very unlikely that the **CDP - P02P solar ionizer** will not generate ions. When in doubt, you can visually check the generation of electricity with this fast procedure:

1. Fill a clear glass or plastic container, with a capacity of 1 liter, with water from the pool or tap.
2. Clean the electrodes and place them without the mesh/basket.
3. Place the **CDP - P02P solar ionizer** on top of the container, hanging from the edge, with the electrodes submerged in the water.
4. Let the sun's rays directly touch the solar panel, and within a few seconds you will notice some small bubbles on the spring spiral, and possibly a bluish cloud around the electrode. This means that an electric current is being generated. The absence of bubbles could indicate a problem.

USEFUL RECOMMENDATIONS

1. You can pour back into the pool the acid you used to clean.
2. If you have applied a plaster finish to your pool, you should let it dry for a month before using the **CDP- P02P solar ionizer.**
3. Baking soda serves to raise the pH, and is sold in most establishments at a very affordable price.
4. Household bleach is excellent for small and medium-sized pools. For large pools, it would be necessary to use large quantities, so it is more practical to use other concentrated forms of chlorine.
5. Keep a chlorine tablet in the filter or float dispenser, to ensure a constant supply of oxidant to the pool and accompany the action of the ionizer. If necessary, add a little more liquid or powder chlorine to keep the water clean.
6. Toothbrushes are useful for cleaning the electrode and casing.
7. Store the chlorine in a dark, cool place.
8. Keep the ion test strip set in a cool, moisture-free place.
9. Check the hardness of the water, measuring the total dissolved solids (TDS), at your local poolware store. If the reading indicates 2000 ppm or more, it is necessary to drain the pool and fill it again with clean water. If this is not possible, it is advisable to remove a part of the water and refill it. If the TDS level is high, water cannot easily absorb or retain minerals
10. You do not need to add cyanuric acid (stabilizer) if you already have some stable form of chlorine, such as tablets.
11. The solar ionizer works well when the pool is covered by a translucent or transparent cover. You can open the pool enough to make the unit float, or make a 3-inch "X" cut

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that allows the electrodes to be submerged in the water, while the top is exposed to sunlight.

12. If the water is clean, transparent and algae-free, and the reading indicates an abnormally low ion concentration, this does not mean that the solar ionizer is not working properly.
13. When changing the mineral electrode, make sure the screw panels are dry.
14. If the water is hard, calcium can eventually be deposited in the solar panel, due to evaporation. To quickly and easily clean calcium tartar, apply an acid and water solution (as described in the 'CLEANING ELECTRODES' section) with a toothbrush. Let the tanks dissolve and rinse. You can use vinegar, although it acts more slowly.

DO'S AND DON'TS

1. Do not follow the advice of people who are not familiar with the **CDP - P02P solar ionizer**. These tips are often offered with the goal of selling or using chlorine and related pool chemicals. In addition, such recommendations usually refer to the chemical composition as a function of chlorine, and are not related to ionized water.
2. Do not add clarifiers or products to remove metals, as these will cancel out the beneficial mineral ions generated by your **CDP - P02P solar ionizer**.
3. Do not use it with products of the Baquacil or Soft Swim brands, or other products of similar "biguanide" chemical composition. You must first remove these products from the water.
4. It is not necessary to add algaecides, since the solar ionizer itself is an algaecide generator using copper mineral ions.
5. Do not subject ionized mineral water to electric shocks. This would be like an atomic bomb for water. Water must be purified. The oxidant should be added only in small doses of upkeep to clear up murky water.

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TECHNICAL SPECIFICATIONS

Model	CDP-P002
Solar panel	2w of anti-condensation tempered glass, with an estimated lifespan of more than 25 years
Casing	Anti-UV PE
Electrode	Special alloy with high copper and silver content (85% and 15% respectively), with a total weight of 0.23 kg
Spring	High quality stainless steel, fixed Non-removable.
Copper test kits	30pcs / case
Basket and screening bolt	Nylon
Accessories included	Electrode, copper test kits, filter basket & 2 bolts, brush & manual
Capacity	Pools of up to 150 m^3 or 32.000 gallons
Adequate copper ion level	0.5 – 0.9 ppm
Electrode duration	1 to 2 seasons depending on the weather, pool size and hours of use
Warranty	2 years against manufacturing defects
Unit size	

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KIT parts

CONTACT DATA

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IMPORTANT NOTICE:

C.D. PRODUCTS S.A. reserves the right to modify the manual and the characteristics of the product without prior notice. In addition, some of the features described in this manual may vary depending on the year in which it was purchased.

This product has been designed and conceived for the use described in this manual. The measures shown on these pages are indicative. Please check the manufacturers' specifications before using. **C.D. PRODUCTS S.A.** will not be liable in any case for the misuse of this product.

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