

What is an ion?

An ion is an atom, or group of atoms that possess an electrical charge. An atom is like a tiny solar system, with a nucleus in the middle and one or more electrons orbiting around the outside. Inside the nucleus are positively charged particles called protons. The electrons are negatively charged. An atom usually contains an equal number of protons and electrons. An ion gets its electrical charge by losing or gaining electrons. If it has an extra electron, it is called an anion. If it has lost an electron, it is a positive ion, or known as a cation. Copper silver ion systems produce cations.

What is copper-silver ionization?

The process that causes an element to gain or lose electrons is called ionization. Copper-silver ionization is the electronic release of copper and silver ions.

How does copper-silver ionization work?

A set of electrodes, made up of an anode and cathode are placed in a flow cell. This flow cell is placed in-line with the circulation system. A controller provides a low voltage, alternating DC current. This is passed between the anode and cathode. The voltage causes some of the outermost atoms of the anode to lose an electron, thus becoming positive ions, which attempt to flow across to the cathode. In this process, the ions are carried away by the flow of water.

How do copper and silver ions sanitize water?

An over simplified explanation is as follows. The copper ion destroys the algae and bacteria by piercing the outer membrane and disrupting enzyme balance. This also allows for other halogens present to enter the cell and help destroy it. Silver ions are effective as a sanitizer because of its efficiency in interrupting DNA production preventing reproduction and accelerating the death phase of the bacteria and viruses. While lethal to bacteria, many viruses and algae, the system is completely safe for

Is it difficult to change the electrodes?

On the some models such as the 150MPC, the electrodes come pre-mounted in a PVC cap. Simply unscrew this cap from the flow cell and replace with a new one. Wrap some teflon tape around the threads before installing. On other models such as the 450MPC, no tools are required as the electrodes are held in place by a quick release sanitary clamp system.

How do I know if my electrodes need cleaning or replacing?

The anode light will not be lit if there is a problem with the electrodes. Also, running the system at higher levels and not being able to generate any sort of copper reading on the test kit will also be an indication.

How hard is it to install the system?

The installation is not difficult in most cases. An installation manual is included with each system.

Will I ever have to shock my pool again?

Yes. As ion systems have no oxidizing potential, it will be required. There are a number of alternatives. If you prefer to use a non chlorine shock, one pound of potassium monopersulfate per 10,000 gallons should be applied once a week in swimming season. This non-chlorine shock dissolves instantly and you can swim immediately after adding it to the pool. You can also use a non stabilized chlorine. The amount will vary depending on the manufacturer. Be sure to follow all directions from both the ion manual and your pool professional.

Why do I need to oxidize?

Oxidizing helps maintain clear, sparkling water. There are a number of contaminants that will be in the water that are not algae or bacteria. These can cause cloudy water, for example, body oils, suntan lotions, and other types of organic matter can be present. The easiest and best way to get rid of these contaminants is by oxidizing. Also, oxidizing helps dissolve the bio-shield that can build up around algae cells preventing the ions from getting to the algae and killing it.

humans, animals and plants.

How do you control the actual amount of ionization taking place?

The electrodes are connected to a control panel which governs the system. By advancing the output time on the controller, you increase the amount of ions dispensed into the water. By reducing the output time, you reduce the number of ions dispensed.

How do you know if ionization is taking place?

Every Thomson Tru-Tec ion system includes a test kit that can measure a precise amount of copper ions in the water. A single test should be done a minimum of once a week in the hot summer months. The test only takes a couple of minutes. You compare the color of the tested water to a chart on the test kit to determine the copper ion level.

What is the recommended copper ion level?

The recommended range is between .20 and .50 ppm. If the reading is low, simply adjust the controller to a higher setting; if the reading is too high, turn the system down.

How can I tell if the unit is functioning?

The controller features a digital readout of the duty cycle and an anode indicator. The anode indicator will be lit when current is passing between anode and cathode. The copper test kit tells the actual copper level.

Do I need to test for the silver ion level?

Whenever the copper ion level is correct, the silver ion level will be in range also. The electrodes are a mix of copper and silver, so the right proportions are always being released at the same time.

How often will I have to oxidize?

It all depends on your pool and the environment. Maintaining good water balance and keeping regular maintenance habits will help. Generally we recommend that you oxidize a minimum of once a week. In cooler weather, or in dry areas, once a month may be sufficient. Commercial pool owners are required to keep an appropriate free chlorine residual in the pool at all times. This varies from district to district. Commercial pool operators should consult with their local health authority to insure they are within regulations.

Are there any other options?

Yes, ion systems work well with ozone, bromine, chlorine and other methods of sanitation. Consult your local pool professional for more information on your particular application.

Do I have to maintain a free chlorine residual in a residential pool or spa?

In residential pools, there is no legal requirement to use chlorine at all. In fact, many ion users don't. They use a non chlorine shock or ozone and are very happy. However, we are not suggesting or recommending the ion system is an alternative to chlorine alone. Lab tests have been done and reports written that state that a low level of chlorine and the use of an ion system is a much better way to sanitize than either method alone. We are in favor of any method or combination of methods that will insure safe, sanitary water and at the same time provide exceptional water quality with virtually none of the down sides associated with standard sanitizing chemicals. In this combination the chlorine level is very low (<.5ppm) so it is basically unnoticeable plus the ion system is much more effective because of the presence of this low level of halogen providing constant oxidization. This provides the best of both worlds.

I have other questions. Who do I talk to?

We are always available to help you and to answer your questions. Visit the [Contact Us](#) page to find the best way for you to reach us with your questions.