2011-5542
2013-08-26

[PRINCIPAL DISPLAY PANEL]

Chem-Saver ™ Swimming Pool System

Model No. ECOPPR

COPPER IONS RELEASING DEVICE

CONTROLS ALGAE
In Swimming Pool Waters

COMMERCIAL

A maximum of 200,000 Litres of water can be treated
with the Chem-Saver Swimming Pool Device.

WARNING: Staining of pool surfaces may occur due to deposit of copper salts.
Excessive levels of copper will increase the probability of this occurrence.

READ THE LABEL AND OPERATING MANUAL BEFORE USING

KEEP OUT OF REACH OF CHILDREN

REGISTRATION NO. 30976 PEST CONTROL PRODUCT ACT

ECOsmarte® Planet Friendly, Inc., 1600 East 78th Street
Richfield, MN, USA, 55423
1-800-466-7946 - North America 612-866-1200 - International

PRECAUTIONS

KEEP OUT OF REACH OF CHILDREN. Store in a closed, original container in a cool dry place. Do not store in direct sunlight. Dispose of packaging in household garbage or recycling stream.

FIRST AID

The following first aid statements are applicable to the acid solutions used for maintaining the pool pH levels and cleaning the electrodes in the Chem-Saver Swimming Pool System or the chlorine sanitizer used in the pool:

If swallowed: Call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control centre or doctor for further treatment advice.

If in eyes: Hold eye open and rinse slowly and gently with water for 15–20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice

DIRECTIONS FOR USE

The Chem-Saver™ Swimming Pool System assists in controlling algae growth by producing copper ions that kill algae. A registered or scheduled chlorine sanitizer MUST be used with Chem-Saver Swimming Pool System. DO NOT USE in conjunction with bromine or any solid or granular chlorine sanitizer. WARNING: Staining of pool surfaces may occur due to deposit of copper salts. Excessive levels of copper will increase the probability of this occurrence.

Set up and operate the system according to manufacturer's instructions to deliver 0.4 to 0.7 ppm of copper. Copper concentration in the water must not exceed 1 mg/L.

1. Make sure pool water is chemically balanced by regular testing as directed on the label for the sanitizer you are using.

2. Test the copper levels in the water weekly using an appropriate copper test kit. Copper levels are directly proportional to ionizer run time. Should the copper level approach or exceed 1 mg/L, simply unplug the ionizer or reduce ionizer running time until the recommended level is reached. To increase copper levels increase the ionizer running time.

3. Check sanitizer levels regularly and refer to the directions for use of your chlorine sanitizer for appropriate water parameters.

NOTICE TO USER: This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label. The user assumes the risk to persons or property that arises from any such use of this product.

ECOsmarte® 2" cu/oxy chamber has been certified to NSF 61 under the Gold Seal Program of the Water Quality Association (WQA).
APVMA APPROVAL NO. 9599/01/1005
EPA EST# 083498-MN-001
REG. NO. 30976 PCPA

[MODEL LABEL: Replacement cell for copper ion releasing device]

Chem-Saver™ Swimming Pool System

Model No. ECOPPR

REPLACEMENT CELL
Model No. ECO2CU

Replacement electrode cell for the copper releasing device Chem-Saver Swimming Pool System
REGISTRATION NUMBER 30976, *PEST CONTROL PRODUCTS ACT*. This cell must only be used on this model of copper ionization device.

Read the Label, the Installation Manual, and Operation Manual of the copper ionization device
Chem-Saver™
Swimming Pool System
before using.

ECOsmarte® Planet Friendly, Inc., 1600 East 78th Street
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1-800-466-7946 – North America 612-866-1200 - International

PLANET FRIENDLY®

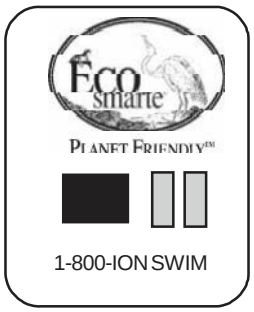
CHEM-SAVER™ SWIMMING POOL SYSTEM

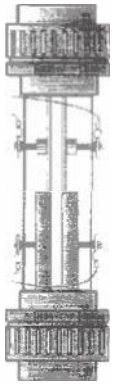
Model No. ECOPPR

COMMERCIAL

FOR POOLS to 200,000 Litres

READ THIS MANUAL BEFORE INSTALLING RETAIN THE MANUAL FOR FUTURE USE
REG. NO 30976 PCPA





WIRE HOOK -UPS

BLACK/WHITE

RED/GREEN

(Connect both to front side of chamber.)

ECOsmarte® Planet Friendly, Inc., 1600 East 78th Street
Richfield, MN, USA 55423
1-800-466-7946 – North America 612-866-1200 - International

The ***Electrode Chamber*** may be installed either horizontally or vertically with our Quick Change Unions. Install the ***Electrode Chamber*** between the pump and filter or between the filter and pool on the pressure side of your piping. The ***ECOsmarte Electronic Box*** can be installed indoors or outdoors. The ***Electronic Box*** is water resistant and comes with pre-wired leads to be connected to the ***Electrode Chamber***. If installation requires additional wire, you may order it from your local ***ECOsmarte*** dealer

Commercial / Chlorine Residual Pools

OWNERS' MANUAL

CONTENTS: ECOsmarte Owners Manual

OVERVIEW

INSTALLATION: The ECOsmarte Chamber is installed on your return line anywhere between the pump and pool. Your power must be within 10 feet of your selected install for the gray chamber leads coming from the ECOsmarte Box to reach the chamber.

The ECOsmarte chamber is marked showing the proper direction for the chamber to be installed. Have your ECOsmarte Pool Manager Test kit available for start-up.

See P. 17

WARNING: Operating the Chem-Saver Swimming pool system without water flow through the cell can cause a build up of flammable gases which can result in FIRE or EXPLOSION.

See P. 2, 19

START-UP

1. With the normal chlorine residual in the pool (1-3 ppm), lower your pH to 7.2. using muriatic acid. Check your pH daily the first week to insure that it stays in the range of 7.2 - 7.4.

2. Adjust your calcium hardness upward if needed to a minimum of 300 ppm. Calcium levels must be between 200 ppm and 400 ppm.

3. Select "IONIZE" on your ECOsmarte Control Box and with pump and let the filter run constantly. For the maximum swimming pool volume of 200 000 L, it will take approximately 2 days for the copper concentration to reach the recommended level, when the system is set at its maximum intensity. Maintain 1-3 ppm of free available chlorine in the pool until the copper concentration reaches 0.4-0.7 ppm. Copper levels should be checked daily with a test kit. Once the copper concentration has reached the required level, maintain 0.6-3ppm of free available chlorine. The presence of organic matter in swimming pool water reduces the effectiveness of sanitizers. Reducing sanitizer levels from 1-3 ppm to 0.6-3 ppm is possible only when the organic matter content in swimming pool water is controlled. Regulations may exist regarding the required level of free available chlorine to maintain; please consult your provincial or local authority.

See P. 5

WEEKLY:

The first few weeks after start-up your ECOsmarte system require just two simple tests in addition to the normal backwashing and vacuuming:

1. Test your pH weekly, adjusting downward to 7.2. The acid demand of your pool should be predictable by the third week.

2. Confirm and adjust your copper level by using the IONIZE mode for 6 to 12 hours per week. The number of hours should also be predictable by the third week.

SEE IMPORTANT SAFETY INFORMATION ON PAGE 13

START-UP

As we begin to protect your water against algae by ionization, the first seven days are critical. You need to closely monitor two water factors in particular: pH and Copper. For optimum results with copper, a pH of 7.2-7.4 is recommended. A pH in this range should prevent precipitation of copper and optimizes algaecidal effectiveness. Copper ions are the algaecide in the water. The water in your pool needs a pH below 7.4. Ideally, begin ionizing after adjusting the pH to 7.2 and expect the pH to rise. The total alkalinity of the pool will fall as you lower your pH. The proper range of alkalinity is 100 to 120 ppm.

During Start-Up the ***ECOsmarte Pool System*** will require more attention. This process will require you to backwash or clean the filter media until most of the contaminants have been removed. A slight increase in filter pressure indicates your filter is functioning. Expect increases in filter pressure and pH rises during Start-Up (first 2 - 3 weeks).

Switch the ***ECOsmarte Electronic Box*** to the Ionize position. After 24 hours of ionizing take a second copper and pH measurement (see TESTING YOUR WATER). Test the pH first and adjust it if necessary with muriatic acid diluted with water. Once your pool has achieved 0.4 ppm copper, switch the ***ECOsmarte Electronic Box*** to Oxidize. If your pool registered copper prior to installing the ***ECOsmarte Pool System***, then ionize until you achieve 0.7 ppm. At this point, your pool should have a copper residual between 0.4 ppm to 0.7 ppm, with chlorine levels per the manufacturer's directions. If this is not the case, consult the PROBLEM SOLVING section of this document. A minimum level of 0.4 ppm copper is required to protect your pool. Swimmers, rainfall, evaporation and algae will cause your copper residual to decrease. **Once your minimum copper residual is reached, your control box is always in the oxygen or "oxidize" mode unless your weekly water test indicates 0.4 ppm copper or below.**

PRELIMINARY STEPS

(1) Confirm 1-3 ppm Chlorine residual. Salt or Bromine users must drain and refill the pool.

(2) Backwash or clean filter thoroughly.

(3) Install ***ECOsmarte Electrode Chamber*** either horizontally or vertically.

Note: If chlorine is at or near zero add 1 L (one quart) Algaecide 60 (polyquat)to the pool and enough liquid chlorine to achieve 1.0 ppm residual.

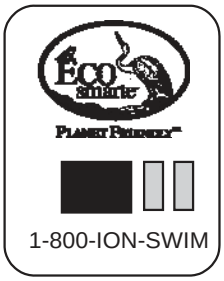
CONVERSION STEPS

(1) Lower pH to 7.2 - 7.4 range. (neutral)

(2) Measure copper, see TESTING YOUR WATER

(3) Turn ***ECOsmarte Electronic Box*** to Ionize, High setting for northern pools, Low setting for Southern pools. High setting for all pools recently filled.Take second Copper test after 24 hours, check pH again.

ELECTRONIC CONTROL BOX



To Ionize, set the ***ECOsmarte Electronic Box*** in the ionize position. A single, circling light indicates power to the ***Electronic Box***. A small glow-lamp diode at the ***Electrode Chamber*** indicates power to the electrodes

You will oxidize, unless a copper measurement indicates a need for copper ions. On average, oxidize 13 days, ionize 1 day, depending on your bather load. ***ECOsmarte*** recommends turning the water over in your pool once per-day, running the ***ECOsmarte Pool System*** only when filtering your water. When the ***Electronic Control Box*** is in the Oxidize position, your pool water will be oxidized as it passes through the ***Electrode Chamber***.

The lights on the ***Electronic Control Box*** will indicate the mode of operation, confirm polarity shift, and alert you to certain problems. Under proper operating conditions a single light will circle whether in the Ionize or Oxidize mode, and a single steady light will appear next to the selected mode. If,

(1) A mode light appears next to both Ionize and Oxidize positions regardless of mode selection, then power is feeding back from the selected electrodes to the other electrodes. This is caused by highly conductive water. As long as the lights are not blinking, leave unit in high mode; check again the second season.

(2) One or more mode lights blinks, then water is extremely conductive. Switch ***Box*** to Low. Leave box on high if both lights are on but not blinking.

If any of these problems persist consult the PROBLEM SOLVING section of this manual or call 1-800-ION-SWIM your toll-free support line.

TESTING YOUR WATER

The ECOsmarte Pool System is dependent on two aspects of your water chemistry: Copper Ions and pH. Each test needs to be performed daily.

pH TEST

Maintain pH within the specified range. *pH must be between 7.2 and 7.4.* Any pH test kit should work fine. Follow the directions included with your kit. Remember to:

(1) Fill the sample container with pool water from at least 45.7 cm (18") below the surface of the pool. Avoid taking samples near the skimmers and return-jets.

(2) Test pH before testing Copper ppm.

(3) Hold tester at arms length (preferrably out of direct sunlight) above the horizon. Look at the sample water and compare to the color standard included with the test kit. Read the pH value once a match is obtained.

(4) If a pH reduction is necessary, use muriatic acid diluted with water in a 19 litres (5 gallon) bucket. WARNING: When mixing acid with water, ALWAYS ADD ACID TO WATER, NEVER ADD WATER TO ACID. See **PH TALK**.

NOTE: Be certain the calcium hardness is at least 200 ppm, 300 ppm is ideal.

pH TALK

- **The first two weeks after installation your pool may consume acid on a regular basis. This is not unusual. If high consumption continues into the fourth week, then possible nitrate and phosphate residuals are creating this problem and a percentage of water may need to be drained back. If phosphates are present in the water, we recommend the use of ZERO PHOS.**
- **Radical changes in pH are not recommended.**
- **Rule of Thumb: If your pool is 56,781 litres (15,000 US gallons) with a pH 7.6 or above, add at least 1.89 litres (1/2 US gallon) of acid; if your pool is 94,635 litres (25,000 US gallons) or above, add at least 3.8L (1 gallon).**
- **Acid consumption will vary according to pool water. However, pH measurements are algorithmic. That is, your pool will need considerably less acid to move from 7.4 to 7.2, than it will to move from 7.8 to 7.2.**
- **DILUTE ACID BEFORE PUTTING IN YOUR POOL**

WARNING: When mixing acid with water, ALWAYS ADD ACID TO WATER, NEVER ADD WATER TO ACID

- **You may want to consider using CO2 injection as an alternative to using muriatic acid to control pH. For more information on CO2 injection contact your ECOsmarte dealer or call 1-800-ION-SWIM (466-7946) or (612) 866-1200.**

COPPER TEST

Always test pH before Copper. If pH is above 7.2, adjust pH level and wait for pH to come down. If the pH is above 8.0 you may create copper chloride which can stain your pool and bathers. The Copper Test procedure for the *EC-70 Liquid Copper Kit*, is as follows.

(1) Fill test tube with pool water to black line. Be sure to take sample from a level 45 cm (18") or more below the surface of the water. Also, avoid samples near the skimmer and return-jets.

(2) Add five (5) drops of Copper Reagent A to test tube. Cap and invert.

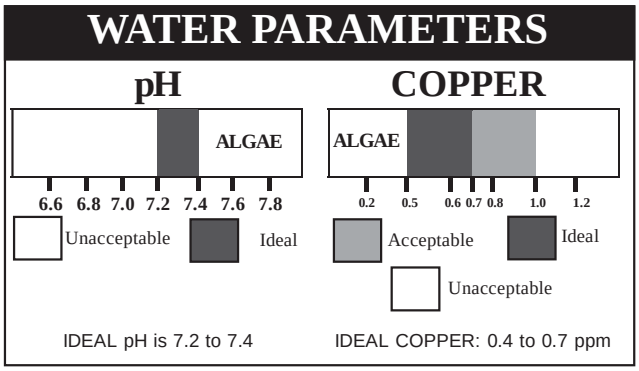
(3) Remove cap and add five (5) drops of Copper Reagent B to test tube. Cap and invert.

(4) Remove cap and place tube in test-kit holder. Allow to stand for approximately two minutes.

(5) While holding the tube, place color standard chart 1.25cm (1/2") underneath the vertical tube. Measure the level of copper by looking directly down into the test tube at a white portion of the color standard provided with the kit. Match the shade of blue and record in parts per million. **INCOMPATIBLE PRODUCTS**

NOTE: Salt users or previous bromine users will need to drain the pool before start-up.

If you plan to have a pool party or expect a rainstorm, test your water.



The Directions for use of your chlorine sanitizer for appropriate water parameters must be followed. DO NOT USE CYANURIC ACID OR OTHER STABILIZED FORMS OF CHLORINE. DO NOT USE BROMINE.

POOL TALK

TURNOVER CYCLES

Use the conversion charts on pages 4 and 6 to determine the time necessary for your pump and filter to completely cycle the water in your pool once. The ***ECOsmarte Pool System*** requires one complete cycle per day in order to help maintain crystal-clear water. The time required for one complete cycle varies among pools. Take care not to exceed the recommended cycle time as over oxidation may result in tiny aeration bubbles in your pool from the oxidize mode.

ECOsmarte understands circumstances exists where a "quick-fix" is necessary, or desired. In cases such as these the following is a list of compatible products. Note that the list is exclusive and anything outside the list is not recommended.

Stabilizers and Conditioners: incompatible
Non-Chlorine Shock: (potassium monopersulfate): *Oxybrite* brand can be used.
Alum-based Flocculants: any, but use sparingly
Microfloc: Proteam *Ion Magic,* avoid these generally
Non-Metallic Algaecide: any, but use sparingly
Filter Cleaner: TSP and Muriatic Acid
Borax: use sparingly for stain prevention
Chlorine: sodium hypochlorite or liquid chlorine only is recommended for ideal results.

WHAT CAUSES ALGAE PROBLEMS?

There are over 21,000 known varieties of algae! Algae constantly enter the pool, brought in by wind, rain or even contaminated swimsuits or equipment. When conditions are right, an algae bloom can occur seemingly overnight. These conditions include imbalanced water, warm temperatures, sunlight, and the presence of nitrates. Of course lack of proper filtration, circulation, and sanitation may be the primary causes of algae. **A suction vacuum is highly recommended with the ECOsmarte system.**

Algae is a living aquatic creature that multiplies rapidly in warm, sunny conditions. Containing chlorophyll, algae utilizes photosynthesis to grow. That is, they take in carbon dioxide and expend oxygen as a byproduct.

The two main problems with algae are, first, people do not want to go swimming, and second, it takes time and money to rid the water completely of algae. Algae itself is not harmful to swimmers, but pools with algae may also be residence to other pathogens.

Proper water balance and filter maintenence are necessary to prevent algae growth. Regular brushing prevents dirt from harboring in the pores of your pool surface, where algae colonies like to start. If the walls and bottom of the pool are not brushed on a regular basis the use of specialty chemicals or algaecides may be necessary as a back up to the ***ECOsmarte Pool System*** and existing filtration. Filtration upgrades will solve 99% of these problems.

Again, ***ECOsmarte*** recommends allowing the system to defeat algae on its own. You will want to adjust valving for optimum circulation and allow your pump and filter to run 24 hours a day until the pool clears (the ***ECOsmarte Pool System*** can be shut off after a single cycle of oxidation, providing Copper ppm levels are above 0.4). Turn on any automatic cleaners to stir things up. Continue to brush the walls. If the pool is really "swampy" additional chemical algaecide such as algaecide 40 or 60 (Polyquat) may be used. If you cannot see the bottom of the pool and it is filled with leaves and debris, you must get all leaves and debris out to clean the water.

POOL VOLUME

• To calculate the amount of water in your pool, insert the requested measurements in the correct equation.

Rectangular Pool:

LENGTH		WIDTH		AVG. DEPTH		1000	=	LITRES
	X		X		X		=	

Circular Pool:

DIAMETER		DIAMETER		AVG. DEPTH		785	=	LITRES
	X		X		X		=	

Oval Pool:

MAX. LENGTH		MAX. WIDTH		AVG. DEPTH		893	=	LITRES
	X		X		X		=	

Sloping Sides: Multiply total litres by 0.85 = litre capacity

• You will use this number to calculate your CYCLE TIME;

WATER VOCABULARY

pH

The technical term for the measure of acidity or alkalinity of water. pH is measured on a logarithmic scale from 0 to 14. At a pH of 7.0 water is neutral. A reading above 7.0 means the water is alkaline. A reading below 7.0 means the water is acidic. During the swimming season, check the pH level daily and after heavy rainstorms. Everything that enters your pool has a pH value. Adjustments should be made to keep the pH within the 7.2 to 7.4. Muriatic acid has an extremely low pH, and, consequently, is used to lower pH. Sodium bicarbonate, or baking soda, has a high pH and is alkaline. With the ***ECOsmarte Pool System*** it is important to maintain a pH within the specified range. For optimum results with copper, a pH of 7.2-7.4 is recommended. A pH in this range helps to avoid copper precipitation.

COPPER

The ***ECOsmarte Pool System*** generates copper ions. Adding copper ions to body of water protects itself against simple organisms such as algae.

TOTAL ALKALINITY

A close cousin of pH, Total Alkalinity is a measurement of all the carbonates in the water: Carbonate, and Bicarbonate. The pool industry has yet to develop a true Total Alkalinity Meter. Available Alkalinity test kits measure the amount of **carbonate alkalinity** in the water. Low Total Alkalinity can cause "pH bounce." "pH bounce" shows itself as large changes in pH after additions of acid or alkali. High alkalinity causes pH to drift upward and will cause pH to require daily testing. Maintain a level of 100-120 ppm total alkalinity.

pH is alkalinity dependent; that is, alkalinity is defined as the ability of the water to resist changes in pH

CALCIUM HARDNESS

Calcium hardness affects pool water quality. Low calcium hardness can promote pool corrosion. High calcium hardness can cause cloudiness. Ideal calcium hardness content is 200 to 300 ppm as measured by a suitable test kit. It is recommended that calcium hardness be tested daily until steady levels are achieved, and then regularly.

POOL STORE COMPUTERS

Can be a useful tool to double check your ph and calcium hardness, however, do not adjust alkalinity unless below 100 and verify whether the copper readings are in ppm or ppd (1 ppm = 1000 ppd). Rely only on the Lamotte Copper test kit included with your ECOsmarte System to use the ionize mode and add copper to the pool.

TIPS FOR pH & ALKALINITY

- **For a reduction in Total Alkalinity experts recommend "pooling" the acid in a small area of low current. Normally, ECOsmarte Pools need no downward alkalinity adjustment.**
- **Upward alkalinity adjustments can be made with sodium bicarbonate, baking soda.**
- **For a reduction in pH, walk acid around the pool and distribute it to the entire pool, having diluted the acid with water in a (19 litres 5 US gallons) bucket.**

WARNING: When mixing acid with water, ALWAYS ADD ACID TO WATER. NEVER ADD WATER TO ACID.

PROBLEM SOLVING

CLOUDY WATER

Can be filter or water parameter related. Do not shock the pool unless a pressure rise has occurred in the filter AND the water parameters are confirmed.

To speed up the cleaning process, you should:

(1) Clean filter media thoroughly, sand filter & DE owners should break down filter each spring.

(2) Test pH and Copper ppm and adjust as needed.

(3) Oxidize water for two cycles per day.

ECOsmarte recommends the above procedure. If a cloudy condition persists beyond three weeks the filter media may be inadequate. Waiting for pressure rise removes the smaller particles and aids your filter in their removal. Glass Media is an alternative replacement media for sand filters. (Sand must be changed every 3 years minimum.)

ALGAE BLOOM

For optimal results the ***ECOsmarte Pool System*** requires a pH between 7.2 and 7.4. If an algae bloom appears it is usually because the pH drifted above 7.4, or the copper residual is below 0.5. The active algaecide in the water is the copper ion. Measure your copper levels and adjust as needed (between 0.4 and 0.7 ppm). The ***ECOsmarte Pool System*** does not "vaporize" organic matter. The ***System*** will kill algae. Adequate filtration and circulation is necessary to run a crystal-clear pool. If an algae bloom occurs, there are a few things you can do to speed up the removal of algae.

(1) Clean filter media thoroughly,

(2) Measure pH and Copper ppm and adjust as needed,

(3) Brush algae toward main drain daily,

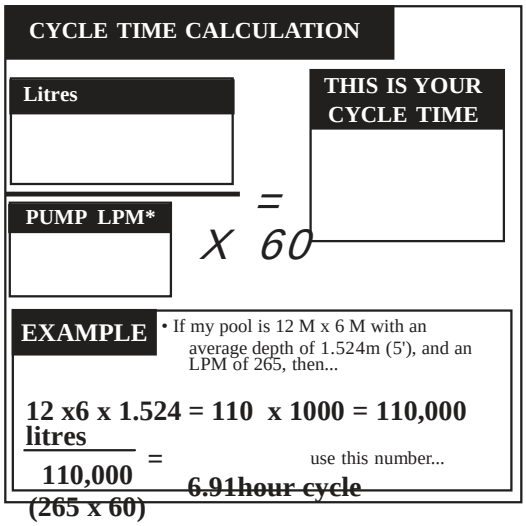
(4) Backwash media when filter pressure rises 6-10 lbs. **Not Before.**

Improper backwashing can cause cloudy or algae water.

ECOsmarte recommends this procedure. If an algae bloom persists beyond one week, use a Non-Metallic Algaecide for additional help. Finally, without adequate filtration dead algae will remain in a pool and a "bad" filter will spin algae through the filter and back into the pool. Note: A DE Filter pool with visible algae should use 1 quart non-metal algaecide to sanitize grids in the DE filter itself. A suction style vacuum versus a sweep or “pop-ups” is recommended.

NEW VINYL LINER OR GUNNITE SURFACE

The most effective way to cure a new vinyl liner or gunnite surface is to lightly chlorinate it above normal sanitizer levels for 10 to 14 days. This process is designed to remove plaster dust before it gets in your filter creating a season of problems. The chlorine residual in the pool will stabilize after the curing process is complete. **Use: 3.8 litres (1 US gallon) of liquid sodium hypochlorite per 37,854 litres(10,000 US gallons) each week for 4-6 consecutive weeks to oxidize the gases from the vinyl or plaster dust from gunnite surfaces. No metal remover should be added to the pool.**



• To calculate your cycle time, enter the appropriate measurements into the equation.

* Litres Per Minute (LPM) can be found on the side of filter pump or written within pump instruction manual. Usually 208 LPM (55 GPM) or 265 LPM (70 GPM).

WINTERIZING

MAIN DRAIN

(1) With skimmer valves closed, open main drain valve.

(2) Open hair and lint basket (sump) at pump. Remove basket. Replace drain plug.

(3) Pour approximately 7.6 L (two gallons) of RV Anti-Freeze into hair and lint basket.

Close basket cover.

(4) Blow from suction side of "blow spot" with main drain valve open, until you can see small trace of Anti-Freeze entering the pool.

(5) Close valve quickly.

WINTERIZING (Cont.)

• Stuff rag or sock in each end of "blow spot." Rubber band or duct-tape rags in place.

• If you have a slide, water-powered vacuum (*Polaris, Kreepy Krauly*, etc.), or water-fill hose installed on your pool they will need to be blown out and filled with Anti-Freeze. Use above procedure in most cases. Some slides, however, may need to be blown from the spot of disconnection.

• **Set sand filter 7-way Valve to the "Winter" or "Closed" position.**

• Remove ladder and railings. Lift cover plate and unfasten 1.11 cm(44") or 1.27 cm (0.50") bolts.

• If diving board is greater than 8' long and snow is expected, remove and store inside for the winter.

• Cover pool with winter cover. If water bag cover is used, fill water bags half-full to prevent winter cracking. Also, allow cover's slack to fall into pool and anchor with as little on deck as possible 0.3-0.6 metre (1 to 2 feet) is ideal. This will prevent the cover from collapsing into the pool under a load of snow.

OPENING NOTES:

New Ecosmarte pools that were chemically treated the previous year should use identical opening procedures as before with Ecosmarte turned on after water is clear.

SAFETY INSTRUCTIONS

- **Disconnect the power to the device before cleaning or replacing the electrodes.**
- **WARNING: To reduce the risk of injury, do not permit children to operate this device.**
- **WARNING: Operating the Chem-Saver Swimming Pool System without water flow through the cell can cause a build up of flammable gases which can result in fire or explosion.**
- **DO NOT add pool chemicals directly to the skimmer. This may damage the unit.**
- **Check the expiry date of the test kit as test results may be inaccurate if used after that date.**
- **For electrical devices: Follow all aspects of the local and National Electrical Code(s) when installing the Chem-Saver Swimming Pool System device.**
- **Use sodium hypochlorite (liquid) to maintain an appropriate chlorine residual in the water.**
- **Heavy bather loads may trigger the need for additional chlorine to be added to maintain an appropriate chlorine residual in the water.**
- **Refer to the Directions for Use of your chlorine/bromine sanitizer for appropriate water parameters.**
- **The expected life expectancy of the copper electrodes is 4 years or 650 hours under normal outdoor use conditions.**
- **When replacing the electrode, only use replacement electrodes having a label that clearly states that it is a replacement electrode for the Chem-Saver Swimming Pool System, REGISTRATION NUMBER 30976, *PEST CONTROL PRODUCTS ACT*.**

MAINTENANCE and OWNER RESPONSIBILITY

(1) **ECOsmarte System:** Following the detailed procedure below, the ECOsmarte Electrode Chamber should be cleaned every other month of operation or as needed under certain water conditions.

(2) **Filter Maintenance:** Adequate filtration is required in order to operate a clear swimming pool. Sand filters can be cleaned by soaking sand with 3.8 L (one gallon) of muriatic acid overnight. Apply the undiluted acid directly to the sand once per year. Cartridge filter elements must be soaked in 2:1 muriatic acid and water solution, then TSP (trisodium phosphate) and water for one hour each (as needed). Replace the cartridge every 18 months for pools. DE Filter elements need the same muriatic bath as cartridges as well as TSP bath for one hour. (Sand filters backwash twice after 6lbs. rise, DE filters three times after 12lbs. rise.)

(3) **Pool Maintenance:** Gunnite pools require pool brushing of areas where automatic vacuum does not reach on a weekly basis. A cavitating pump will run our Electrode Chamber dry and result in poor automatic vacuuming. **Vinyl, Gunnite, and Fiberglass pools work best with suction wall vacuum, not a sweep.**

ELECTRODE CLEANING PROCEDURE

(1) Disconnect the power to the device before cleaning or replacing the electrodes.

(2) Mix solution of 5 parts water to 1 part acid in a bucket. When adding acid to water be careful not to spill or be down wind when pouring. WARNING: When mixing acid with water, ALWAYS ADD ACID TO WATER. NEVER ADD WATER TO ACID.

(3) Disconnect terminal clips*****. The Red & Green wires attach to the copper side of the chamber, the Black & White to the titanium side. **If uneven electrode wear is noted on copper electrodes you must reverse position of the Green & Red terminal clips after cleaning.**

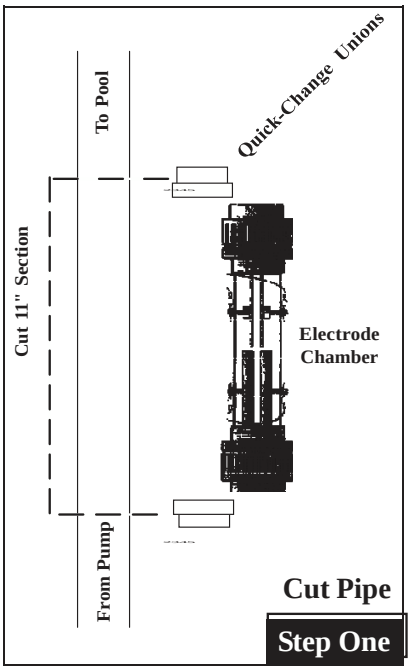
(4) Place entire Electrode Chamber in bucket for 10 to 15 minutes. The build-up will slowly dissolve. Do not scrape the surface of the electrodes. If you will be cleaning it yourself, consider cleaning caps to cut acid use and speed process. Cleaning caps from your dealer will cut acid use and simplify this procedure.

(5) Remove Electrode Chamber from bucket and rinse with garden-hose pressure. Make sure to rinse your hand as well.

(6) Wipe terminal clips dry and reconnect leads after reinstalling the Electrode Chamber in pressure line. Remember: Red & Green connect to the cop- per side, Black & White to the titanium, as indicated on the silver decal on the chamber.

*** DO NOT DISASSEMBLE THE CHAMBER FOR CLEANING.**

Electrode Chamber Installation



The ***ECOsmarte Electrode Chamber*** may be installed either between the pump and filter or, preferably, after the filter. The copper electrodes should be aligned nearest the pool (see diagram). If you have a spa in line with your pool filter system, ensure the ***Electrode Chamber*** is located before the valves that divide return water to the pool and spa.

Tools List:

- ☐ **Hack Saw**
- ☐ **PVC Cleaner**
- ☐ **Felt-Tip Marker**
- ☐ **Tape Measure**
- ☐ **PVC Cement**