

INTRODUCTION



As the owner of a new swimming pool you are to be congratulated. Years of recreation, relaxation and therapy await you, your family and your friends. While others sit around dreaming of cool comfort, you have made dreams come true right in your own backyard. So go ahead and enjoy all of the benefits of pool ownership. But before dipping into your new pool, take some time “dipping” into the information

we have put together for you in this interactive pool manual program.

To operate your pool safely and trouble-free you need to know the basics of pool care. If you understand and follow a good maintenance routine- with proper filtration, balanced-pool water and a consistent chemical program, your pool water will be sparkling clean and easy to maintain. Preventative maintenance will save you time and money in correcting water problems that could have been avoided while protecting your pool and equipment from damage caused by imbalanced pool water.

The amount of water in your pool is a figure you will reference often for chemical adjustments. If you do not know the water capacity of your pool click you can use this software to calculate by clicking on Water Analysis at the main menu and entering the dimensions of your pool. We recommend that you fill out the following page and record all pool information including water capacity, equipment models, serial numbers, etc. This information along with any warranty papers and owner’s manuals that came with your pool should be kept on file for future reference.

As a pool owner it is your responsibility to make your pool environment as safe as possible. Please read all of the safety information provided with your pool and follow the [swimming pool safety information](#) within this manual. The APSP (Association of Pool & Spa Professionals) publishes several pool safety pamphlets that can be obtained online at www.theapsp.org or by calling 703-838-0083. Warning signs or notices supplied by the manufacturer should be posted or applied where they are visible to pool users.

When you installed the program you were asked to select specific equipment for your pool. If you need to make a change to the sanitizer or equipment selections after installation of the software, go to the Main Menu/Test Water. If you have already entered the capacity of your pool, use the previous button at the bottom of the window. There you will see the Change Settings option. To change settings you will need an active internet connection.



Each portion of the manual can be printed by page or in its entirety by clicking on File, Print in the upper toolbar. When printing be sure you have chosen the current page only or desired pages under page range or you may end up printing the entire manual. If you are looking for information on a certain topic, such as SHOCK, simply click on SEARCH (from bookmark), enter the

word in the search box and all information on that subject will be shown.

Remember, if you encounter questions or concerns our sales staff is always here to help you- please don't hesitate to stop by our store or give us a call. Our contact information can be found in the [Contact](#) section. For questions or technical concerns related to your software please contact Pool Software directly at help@poolsoftware.com or call 800-899-7479.

Welcome to the Rhiel family. We're glad you've joined us for many summers of fun!

www.rhiel.com

SWIMMING POOL OWNER'S RECORD

It is recommended that you print this page and record the completed information. If you have any questions you can take this paper to your Rhiel salesperson for assistance. Once completed you should maintain this Owner's Record on file along with any warranty papers, instructions and owner's manuals that came with your pool.

TO PRINT: Click on File upper left corner of the toolbar), Print, Go to Page Range and click on Current Page (otherwise you may print the whole manual).

NAME _____ **DATE INSTALLED** _____

POOL TYPE _____ **POOL SIZE** _____

WATER CAPACITY* _____ (gallons) **POOL FINISH** _____

**go to Test Water for an estimated calculation if you don't know the gallons in your pool.*

POOL EQUIPMENT – list Manufacturer (make), model name and number and serial number*
**this information can typically be found labeled on the equipment*

FILTER

Make _____ Model _____ Serial# _____

Filter Media _____

NOTES: _____

PUMP & MOTOR **recommended run time 24 hrs per day.*

Make _____ Model _____ Serial# _____

NOTES: _____

HEATER / HEAT PUMP

Make _____ Model _____ Serial# _____

NOTES: _____

OPTIONAL EQUIPMENT (Light, pool cleaner, chlorinator, timer, controller, etc.)

_____ Make/Model _____ Serial# _____

_____ Make/Model _____ Serial# _____

_____ Make/Model _____ Serial# _____

_____ Make/Model _____ Serial# _____

NOTES: _____

WATER TESTING

All water is not alike. Although two atoms of hydrogen and one of oxygen form the liquid we call water, within this liquid are dozens of other elements. Trace metals, minerals like calcium and sodium, dissolved gasses like nitrogen and carbon dioxide, and living organisms like bacteria, algae, mold and fungus, not to mention all the other chemicals we add deliberately are found within water. Water is the universal solvent. That means virtually any element that occurs in nature can be picked up or dissolved into solution in water.

Swimming pool water has chemical characteristics which must be measured regularly. Rhiel Supply stores offer professional, computerized water analysis free of charge. Have your water professionally tested **PRIOR** to adding any chemicals and as needed in season. Additionally, you will be testing your water at home 1-2 times per week for Sanitizer and pH, as these levels can quickly change.

When testing your pool water take a sample from approximately 12" below the water's surface and away from any return inlets. You can enter your test results into the computerized water analysis software within this manual, Test Water at the main menu, and receive accurate chemical recommendations and dosages to maintain balanced pool water.



Test Strips –provide quick and accurate results for a variety of water tests. A typical test strip will provide sanitizer, pH and Total Alkalinity readings. As with any test kit, there are several factors that can be controlled to insure the validity of the test results. Following are some guidelines for using test strips to obtain accurate water analysis results.

- **Follow the directions that came with the kit.** Sounds simple, doesn't it? However, there have been many cases where a user inadvertently used the directions that came with another manufacturer's strips or used directions from an older kit. Most inaccurate test results occur when individuals do not follow directions or follow the wrong directions! Test strips are continually improving and becoming more accurate, and you should never assume that the directions on one container are going to apply to another container's strips. In addition, not all manufacturers' test strips are the same, so it is essential to read and follow the directions on each container.
- **Store test strips in a low humidity environment at room temperature.** Test strips will be most effective over a long period of time if they are stored properly. Suitable storage will give you confidence in your results until the product has reached the date of expiration.
- **Keep the cap on tight between uses.** Doing this will prevent moisture from entering the bottle of unused strips. It is important that moisture not be introduced to the test strips until you use them in your pool or spa.
- **Keep wet fingers out of the bottle.** The test strips won't know the difference between the water on your fingers and the pool or spa water! So, make sure that the only water your test strips are reacting with is the pool or spa water you intend to measure.
- **Do not use expired test strips.** Most containers of test strips will display an expiration date somewhere on the container. Always be aware of this date when using or purchasing test strips. Regardless of how the container has been stored or handled, test strips have a definite shelf life and should not be used after the product has expired. Using test strips after this date will likely lead to inaccurate results. Therefore, replace any bottles that have expired.

WATER TESTING SOFTWARE

Your SPARCO Pool Manual includes a water analysis testing program, TestMate 4 Pools™. As mentioned earlier it is a good idea to test your pool water at least two to three times a week. If the sanitizer, pH or alkalinity tests are not in the acceptable ranges you will want to go to the water testing button on the main menu. Here you will enter your test results and receive chemical recommendations with dosages to balance your pool water. Maintaining a consistent chemical routine is extremely important in keeping your pool clean, clear and healthy. Once you have started on a chemical program stick with it. Chemical brands can vary quite a bit and mixing different chemicals can be dangerous. If you follow our recommended chemical routine along with good pool maintenance (vacuuming and filtration) your pool will look great and be easy to maintain. TestMate will help you save time and money using only the chemicals you need, when you need them.



Be sure to have your pool water professionally tested at Rhiel Supply at the beginning of every season and as needed throughout the summer. When performing in-store water analysis a wide range of tests are performed to be certain that your water is balanced. Your TestMate water-testing program will help you to maintain that balance throughout the season. Of course if you are experiencing a water problem beyond your basic: sanitizer, pH or alkalinity tests you should bring us a water sample for a complete analysis, free of charge. At Rhiel Supply we strive to offer the best

chemical advice possible. However, only you, the pool owner, can truly monitor your pools' condition. The information we see in our in-store analysis is only a snapshot of the actual condition. This manual was designed to assist you in being an informed pool owner, as you, ultimately, are responsible for the well being of your pool.

ALWAYS READ ALL CHEMICAL INSTRUCTIONS AND FOLLOW ALL MANUFACTURER RECOMMENDATIONS FOR SAFETY WHEN HANDLING AND STORING ANY CHEMICALS.

If you are experiencing any difficulty with the operation of this software please contact Pool Software at help@poolsoftware.com or by calling 800-899-7479. If you are having difficulty maintaining your pool or with the chemistry of your water please bring a water sample to our store.



BASIC WATER CHEMISTRY



Understanding the basics of pool water chemistry and balanced water will help you to properly maintain your pool. Clean and healthy pool water is achieved through chemical treatment, water balance, good maintenance (cleaning and vacuuming) and proper circulation/filtration. All of these elements work together to provide sparkling clear water and a comfortable pool. Remember, clean, healthy pool water is not only free of debris that

you can see, but also free of bacteria which you cannot see.

Chemicals used in swimming pools include: Sanitizers to disinfect and destroy harmful or otherwise objectionable organisms; Total Alkalinity and pH Adjusters to maintain a consistent acid-base relationship and acid buffering capacity; Chlorine Stabilizer to prevent unnecessary loss of chlorine; Algaecide to kill and prevent algae, and Filter cleaners to help remove foreign material. Most chemical brands offer weekly treatment programs that will include some or all of the chemicals mentioned above. Be sure to read and follow all manufacturers' instructions for the chemical treatment program recommended by your Rhiel Supply professional.

The following is a listing of proper chemical parameters for your vinyl lined pool.

TEST	IDEAL
SimpleBlue	
pH	7.2-7.6
Total Alkalinity	80-150 ppm
Oxidizer- SimpleBlue	1 ppm
Calcium Hardness	300-500 ppm* SimpleBlue only

Other Chemical Maintenance Programs

pH	7.2-7.6
Total Alkalinity	80-150 ppm
Free Chlorine- SPARCO	1.0-3.0 ppm
Free Chlorine- FROG	0.5-1.5 ppm
SoftSwim Sanitizer	30-50 ppm

The following tests should be performed by Rhiel Supply

TEST	IDEAL
TDS (total dissolved solids)	under 2000
Calcium Hardness	300-500 Simple Blue, <i>all other programs 200-400 ppm</i>
Cyanuric Acid (conditioner/stabilizer)	30-50 ppm
Metals- NO metals should be present	none



Sanitizers

Maintaining the proper level of sanitizer in your pool at all times is critical to the health of swimmers and comfort of your pool water. To learn more about the different types of sanitizers and the desired levels you may click on the listing below:

[Your Sanitizer Program](#)

pH 7.2-7.6

pH is the single most important element in swimming pool water chemistry. It affects every other chemical balance in pool water. pH is the measure of acid vs. alkaline of a solution. The pH scale runs from 0 to 14 with 7.0 being the neutral point. It is important to maintain a pH reading between 7.2 and 7.6, to ensure swimmer comfort, water balance and to maximize the effectiveness of your sanitizer. The type of sanitizer you use can affect your pH as will rain water and many other things, requiring you to test and adjust your pH on a regular basis.

Low pH

When the pH reading is low (below 7.2) your pool water is acidic. Acidic pool water can cause damage to vinyl and plaster pool walls while corroding metal plumbing and metal components in heaters, pumps and filters. Low pH water also causes skin and eye irritation, making the eyes look red (a condition often mistaken for too much chlorine). You will also find a rapid loss of your chlorine residual and total alkalinity when the pH is too low.

High pH

When your pH reading is too high (over 7.8) your pool water is too alkaline. This condition will often make your water hazy or dull and can cause scaling of your pool walls, plumbing and equipment. Your sanitizer becomes less effective-requiring you to use more while a High pH can also cause skin and eye irritation.

Adjusting pH

To avoid the problems listed above, **pH must be maintained between 7.2 and 7.8**. The most desirable level for pH is between 7.4 and 7.6. If you enter your pH test results into TestMate 4 Pools you will receive proper chemical recommendations with the dosages required to balance your pool. Be sure to follow the manufacturer's label recommendations for applying these chemicals and do not add any more than the recommended dosage per application. **DO NOT** make rapid changes in the pH or Total alkalinity or you may cause metals and minerals to precipitate and cause staining or scaling. You should gradually adjust the readings and allow the water to re-circulate then retest in 4 to 6 hours to determine if further treatment is necessary. If problems with low pH persist, it may be necessary to raise total alkalinity to stabilize the pH. Bring a water sample to Rhiel Supply for a free water analysis and treatment recommendation.

Raising pH with Rhiel pH Increase Powder

If pH is too low - raise pH by adding pH Increaser. Never add more than 2 lbs per 10,000 gallons in a single treatment. After application allow water to circulate a minimum of 3 hours, retest and continue to adjust if necessary.

Lowering pH with Rhiel pH Decrease Powder

If pH is too high you will need to lower by adding pH Decreaser. You should gradually adjust the readings adding no more than 1 lb. of pH Decrease Powder per 10,000 gallons of water per application. After application allow water to circulate a minimum of 3 -4 hours, retest and continue to adjust if necessary.

Total Alkalinity 80-150 ppm

Total Alkalinity (T.A.) is a measurement of the concentration of alkaline minerals in your pool water that provide a pH buffering capacity (the water's ability to resist sudden changes in the pH). Although Total Alkalinity is not the same as pH it is instrumental in stabilizing the pH to prevent fluctuation. The ideal range to maintain your Total Alkalinity is 80-150 ppm. When T.A. values fall below the recommended range, the pH is easily affected. Even a small amount of high or low pH material introduced into the water can result in large swings in pH values. Generally when T.A. is low, the pH remains low as well, causing your pool water to be corrosive and irritating to swimmers. At high T.A. levels, small additions of calcium can produce scale. The pH tends to remain high and attempts to lower pH are short lived.

Raising Total Alkalinity Using Total Alkalinity Increaser

When the Total Alkalinity of your pool is low (below 80 ppm) you will need to raise it by adding Total Alkalinity Increaser. This chemical will raise the T.A. level while having a moderate effect on the pH level. Follow the manufacturer's recommendations for application by either broadcasting the chemical or pre-dissolving. Allow the water to circulate a minimum of 6 hours then retest to determine if further adjustments are necessary.

Lowering Alkalinity Using pH Decreaser

If alkalinity is too high you will need to lower by adding pH Decrease Powder. You should gradually adjust the readings adding no more than 1 lb. of pH Decrease Powder per 10,000 gallons of water per application. After application allow water to circulate a minimum of 6 hours, retest and continue to adjust if necessary.

TOTAL DISSOLVED SOLIDS under 2,000

The Total Dissolved Solids (TDS) in your water should be under 2,000 ppm. A proper level of TDS in the water will help maintain balance. This level can be changed by draining and refilling the pool with fresh water.

CALCIUM HARDNESS 300-500 SimpleBlue users only – all others 200-400 ppm

Calcium Hardness is a measurement of calcium and magnesium in your water. Having the proper level of calcium hardness is important to maintain water balance. If the level is too low the water can be corrosive and if too high staining, scaling and cloudy water can appear. Maintaining the calcium hardness level of your pool water between 300-500 ppm is an important requirement for the success of your Simple Blue program. When Calcium Hardness levels are too low (below 300/200 ppm) they can be raised by adding Calcium Plus at a rate of 20 oz. per 10,000 gallons of water to raise the calcium hardness level by 10 ppm. Levels that are too high (above 500/400 ppm) can be lowered by partially draining and re-filling with fresh water.* Be sure to test the make-up water going into the pool for the hardness levels- if too high a water softener should be used. Always consult your Rhiel Supply professional prior to draining water from your pool.

METALS 0

There are various metallic substances that can be found in pool water (copper, iron, manganese, etc.) which can cause staining and discoloration in your pool. These substances can occur naturally from the water used to fill the pool or from metallic pool equipment parts if water has been acidic or corrosive. Rhiel Supply can test for the presence of metals in your pool water and recommend a course of treatment for removal using products such as SimpleBlue Stain and Scale Remover. See the [Staining and Scaling](#) section for more information.

SANITIZING YOUR POOL

Clean, clear, healthy pool water is the result of proper sanitation, filtration and circulation. The term sanitize means to *kill all disease-causing organisms*. The sanitizer is the key component of your chemical program. In order to be effective, a chemical program used to treat pool water must not only sanitize but also disinfect – *kill all living organisms* and oxidize- *destroy organic waste*.

There are many sanitizer options available today. A member of our staff will be happy to assist you in selecting the program that best suits your pool type, geographic region and lifestyle. Once you find a sanitizer program that works for you stick with it! Maintaining a consistent level of sanitizer in your water will prevent bacteria and algae growth and provide sparkling clear water.

Many swimming pool products are incompatible and should not be used with certain sanitizers, alternative sanitizers or pool types. Again, it is best to stick with the products offered in your brand specific chemical program.

**[CLICK HERE FOR COMPLETE INSTRUCTIONS
FOR YOUR SANITIZER](#)**

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The basics of water chemistry, found within this manual, explains the importance of water chemistry and the role that water balance plays in the effectiveness of your sanitizer. Be sure to review this section, [see Basics of Water Chemistry](#).

Each chemical program requires specific handling and storage precautions. Please read and follow all label directions as well as the safety recommendations listed in [Chemical Safety](#). In all cases chemicals should be kept in a dry location out of the reach of children.



SPECIALTY CHEMICALS

There are many specialty chemical products available today to treat a wide range of water problems while reducing chemical usage and maintenance time. Some of these products are to be used as-needed to treat specific water problems while others are recommended as part of your routine start-up or weekly maintenance program.

Algae Treatment-

As discussed early in this manual, prevention is always preferable to treatment when it comes to water problems. Maintaining the proper level of sanitizer in your pool is critical to the prevention of algae. In addition there are algae inhibitors that can be routinely added to prevent algae growth and algae killers that can be used if an algae problem occurs.

Algae Inhibitors-

Chlorinated pools will benefit from regular maintenance doses of Rhial Algae Inhibitor. Every 2 weeks add 2 ounces per 5,000 gallons of water.

Algae Killers-

The concentrated formula in Rhial Algae Inhibitor makes it a very effective killer in treating all types of algae. Treatment of an existing algae problem will also include shocking the pool with BioGuard Burn Out Extreme, 1 lb. per 6,000 gallons. See [Algae](#) for details. SoftSwim users should only use SoftSwim Algacide and SoftSwim Shock.



Chelating or sequestering agents- Stain Preventors



If metals or minerals are present in pool water we may recommend a chelating or sequestering agent to prevent staining or scaling by binding metals or minerals together so they will not precipitate (fall out of solution). These products work best to prevent discoloration **PRIOR** to the use of any chemicals, so remember to have your water tested for metals at Rhial Supply **BEFORE** adding chemicals. Simple Blue Stain & Scale Remover is specially formulated to remove metals and prevent scale and corrosion. It can be used with any of our chemical programs.

[See Staining & Scaling for more information.](#)

Clarifiers

Clarifiers attract and coagulate, or bind, small particles together making them large enough to be trapped by the filter. Be sure to read and follow the bottle's instruction label. [See Cloudy Water for more information.](#)

Enzyme Products

Enzymes provide a natural method for combating organic matter in your pool water. **White River Pool Pizazz** gently but powerfully breaks down sun-tan oils, body oils and other organics in the water. A weekly addition of 1 oz. per 8,000 gallons of Pool Pizazz can reduce foaming and scum-lines, increase water clarity and decrease backwashing frequency. For best results **DO NOT** add Pool Pizazz immediately before or after shocking the pool.



Filter Cleaners



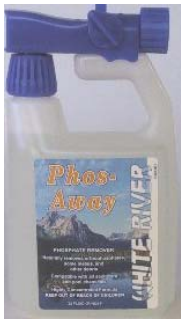
Generally, your filter should be chemically cleaned 1 to 3 times per season. Chlorine and FROG treated pools with Cartridge or D.E. filters should clean the filter using White River FC-5 Filter Cleaner. SimpleBlue users with Cartridge, D.E or Sand systems should use SimpleBlue Filter Cleaner.

- Promotes greater filter efficiency
- Keeps water clearer
- Lengthens the life of the filter media
- Reduces maintenance costs
- Can reduce chemical use

Pools sanitizing with the the SoftSwim should clean their filter montly using SoftSwim filter cleaner, per label directions.



Phosphate Treatment



Phosphates are a primary nutrient for algae- by removing the food source pool water becomes much less inviting for algae growth. A well maintained pool with proper sanitizer levels should not experience algae problems, but the higher the phosphate level goes, the more algae flourishes and the more resistant it becomes. In most cases phosphates enter the pool in the fill water, which runs from 100 parts per billion (ppb) to more than 1,000 ppb (many water districts add phosphates to their water to inhibit corrosion). Other sources include rain water, fertilizers, some pool chemicals, organic debris (like bark or leaves) and people. In other words, phosphates are always entering a pool.

White River Phos Away usually requires only one application to help prevent algae all season long and works with all of our chemical programs, including Aqua Silk. We recommend all pool owners add an initial dose of Phos Away at the start of each season: 1 bottle will treat all pools up to 24,000 gallons.

Tile & Vinyl Cleaner

You should clean the waterline of the pool often to prevent a scum-line from forming. White River SC4000 is a super industrial strength, non-abrasive, pool waterline and spa surface cleaner. SC4000 is effective in removing scale and hard water deposits, grease and dirt along the water line. SoftSwim users should NOT use SC4000 to clean the liner. We suggest SoftSwim users clean with BioGuard's Off The Wall™ tile & vinyl cleaner.



CAUTION: When using any chemical you should always read the label directions for usage and handling instructions. Follow all safety guidelines on the bottle as well as the [Chemical Safety](#) recommendations found within this manual.

If your pool is treated with *SoftSwim* some specialty products may **NOT** be compatible with your program. Please consult Rhiel Supply for specific product recommendations.



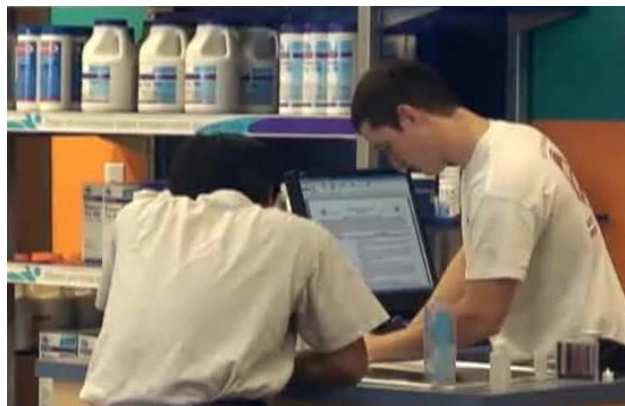
CHEMICAL SAFETY

To handle swimming pool chemicals safely they must be used and stored properly. Problems occur when careless mistakes are made. By reading and following the label instructions along with some easy safety rules below, accidents can be prevented. In addition to these safety recommendations be certain to always read and follow the directions on the bottle label.



MSDS should be available on the chemical company's website or telephone hotline for specific safety and handling instructions. In the event of an emergency that requires medical treatment have the product container on hand and immediately call 911 or U.S. Poison Control at 1-800-222-1222

1. FOLLOW INSTRUCTIONS CLOSELY: MIX CHEMICALS ONLY AS INSTRUCTED.
2. NEVER add water to chemicals—add chemicals to water slowly.
3. ALWAYS use the exact dosage specified on the label by the manufacturer.
4. PROTECT eyes with glasses or a mask when handling chemicals.
5. ALWAYS open product containers in a well-ventilated area.
6. NEVER mix different chemicals together. This can produce a chemical reaction that can lead to a fire, toxic fumes or explosion.
7. ALWAYS use a clean dipper or scoop; free of oil, grease, or insecticides. Even a small amount of residue can combine with the chemicals and produce a danger.
8. ALWAYS keep chemicals in their original containers, tightly sealed.
9. STORE your chemicals in a clean, dry, well-ventilated area away from household items such as fertilizer, gasoline, oil, or other cleaning solutions.
10. NEVER store any liquid products directly over or directly next to dry pool products (trichlor, granular chlorinators, shock products).
11. KEEP liquid acid (muriatic) and liquid chlorine products away from each other and away from all shock products and chlorine-based products.
12. SEPARATE your pool care products with an empty space (at least 3 feet) as a buffer zone between products.
13. CAREFULLY read the active ingredient section on the front of the product label to determine what acids, balance chemicals, or oxidizers it contains.
14. ALWAYS clean up spills immediately with a clean broom or dust pan. Dispose of spilled materials in clean container. DO NOT PUT SPILLED CHEMICALS BACK IN THEIR ORIGINAL CONTAINER. The chemical may have been contaminated.
15. REMEMBER to rinse plastic dispensing containers with water after use.
16. KEEP chemicals away from electrical equipment and open flames.
17. NEVER FLUSH excessive amounts of chemicals down storm sewers. In case of large spills, contact your local fire department for assistance.
18. ALWAYS wash hands thoroughly after handling chemicals.



ACIDS AND OXIDIZERS SAFETY

Acids- highly corrosive substances and must be handled with extreme care. Muriatic acid (Hydrochloric acid) and Sodium bisulfate are acids most commonly used in the care of pools.

Protective Equipment

- Eyes-goggles or full face shield when splashing may occur
- Hands-gloves (rubber, neoprene, or PVC)
- Body-coveralls and impervious boots
- Lungs-proper ventilation

Handling Precautions

- DO NOT take internally
- Avoid contact with eyes, skin or clothing
- Upon contact with skin or eyes, rinse with water
- Avoid breathing vapor (muriatic acid) and dust (sodium bisulfate)
- Store all containers in a cool, dry place
- *Always add acids to plenty of water...Never add water to acids*

Conditions and Materials to Avoid

- Avoid contact with strong alkalis such as caustic soda, sodium carbonate, etc
- Avoid contact with all oxidizers
- Do not store in wet or moist conditions

Balance Chemicals- Although acids are balance chemicals, they have be treated separately. The balance chemicals Sodium bicarbonate, Sodium carbonate, and Calcium chloride are all basic (high pH) and increase pH, TA and Calcium Hardness.

Protective Equipment

- Eyes-goggles
- Hands-gloves (rubber, neoprene, or PVC)

Handling Precautions

- DO NOT take internally
- Avoid contact with eyes, skin or clothing
- Avoid breathing dust, spray or mist
- Store containers in a cool, dry place
- Always keep containers tightly sealed
- *Caution: DO NOT MIX balancing chemicals with anything other than water*

Conditions and Materials to Avoid

- Avoid contact with acids
- Avoid contact with organics and oxidizers
- Do not store near acids

Oxidizers- The precautions for oxidizers are important in handling the following: Calcium hypochlorite, Lithium hypochlorite, Sodium hypochlorite (Liquid shock, Bleach), Trichlor, Sodium dichlor, Bromine, Potassium peroxymonosulfate (Oxy shock, Non-chlorine shock).

Protective Equipment

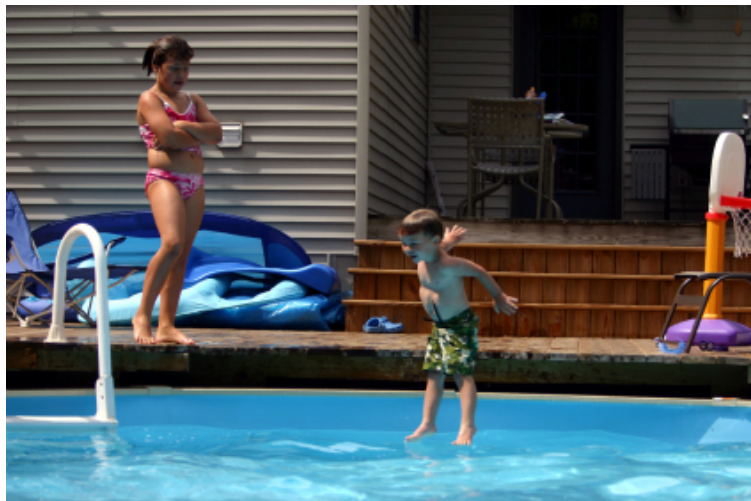
- Eyes-goggles
- Hands-gloves (rubber, neoprene, or PVC)
- Lungs-provide ventilation where dust is likely

Handling Precautions

- DO NOT take internally
- Avoid contact with eyes, skin or clothing
- Upon contact with skin or eyes, rinse with water
- Avoid breathing dust
- Store all containers in a cool, dry place
- Do not store containers in direct sun light
- Do not store near combustible materials
- Do not mix oxidizers
- Use clean, dry utensils when handling oxidizers
- Keep all oxidizer containers off wet floors

Conditions and Material to Avoid

- Excessive heat—oxidizers will decompose, releasing toxic gasses and heat
- Solvents
- Acids
- Other pool chemicals such as acids, algacides, clarifiers, sequestering agents, surface cleaners, etc.
- Organic materials
- *Do not mix chemicals with anything other than pool water. Always add chemicals to plenty of water. Never add water to chemicals.*



ALGAE

Algae is the most common water problem in swimming pools. Inadequate sanitizer levels, improper water balance and improper filtration can all play a part in the growth of algae. Algae are microscopic plant life that are very tough and resourceful. There are many types of algae, yellow, green, brown, or black. Thousands of species of algae exist. Green algae are the most common type and the easiest to get rid of. Green algae can appear in patches or create an all-over cloudy green shade of water. Pink slimy algae are actually not algae but fungus bacteria, often appearing as streaks or spots in corners and crevices. Sometimes it appears as a pink or orange colored ring around the skimmer or waterline. See [Water Mold or Pink Slime](#) for details and treatment. Mustard algae prefer shady areas like pool step corners, along the walls and under the pool lights, ladders or other fixtures. Black algae often appear as dark colored spots on the walls or floor. Temperature, sunlight, pH, sanitizer level and the presence of carbon dioxide, phosphates and nitrates all affect the presence and growth rate of algae. Algae can be introduced into the pool by rain or wind, leaves and organic material, even fill water. In early stages of algae infestation you may notice the water circulation slowing as the filter is removing algae spores, the filter pressure builds and the return flow decreases.

In all cases it is much easier and better to prevent the growth of algae than to cure it.

Prevention

To prevent algae from growing in the first place requires regular pool maintenance, proper circulation and filtration; keeping the pH and free chlorine residual or other sanitizer at the proper level, keeping the pool clean and vacuumed, shocking and adding a maintenance algaecide to help prevent algae growth. While proper sanitizer levels will prevent most algae growth there are some strains that are resistant to chlorine and other sanitizers. We do recommend an initial dose of White River Phos-Away on start-up of your pool. Phos-Away removes phosphates- which deter algae growth throughout the season and can be used with all of our chemical treatment programs. See [Specialty Chemicals](#) for more information. The SimpleBlue program does NOT require a routine addition of algaecide. Chlorinated pools should add a dose of Rhiel Algae Inhibitor at a rate of 2 ounces per 5,000 gallons of water every two weeks. SoftSwim users should only add SoftSwim Algaecide weekly, according to label directions.

Treatment

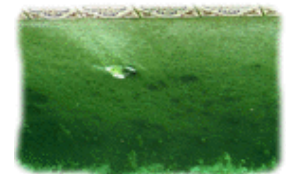
If your pool would develop algae you should bring a quart water sample to Rhiel Supply for a complete water analysis. Follow all water balance and treatment recommendations as prescribed by your Rhiel Supply professional. Treatment for algae will generally include shocking the pool with Burn Out Extreme and adding Rhiel Algae Inhibitor. SoftSwim users should ONLY use SoftSwim Shock and SoftSwim Algaecide.

Green Algae

If your algae problem is extreme you should bring a quart water sample to our store for analysis and recommendation. The following treatment is for mild or early stages of algae development.

DAY 1 Treatment

1. Remove solar cover and discontinue use during treatment of active algae growth.
2. Check pH and Alkalinity, adjust if necessary.
3. Brush sides and bottom of pool with a maintenance brush.



4. Shock pool with Burn Out Extreme using 1 lb. per 6,000 gallons of water. This should be added after sundown and when the pool is not in use. Pre-dissolve in a clean bucket of pool water outside. **ALWAYS** add chlorine to water NOT water to chlorine. **DO NOT** inhale as fumes will be very strong. **NEVER** mix with any other chemicals! *SoftSwim USERS* remember you CANNOT use chlorine or non-chlorine shock and must always use the SoftSwim Shock.
5. Run filter continuously.

DAY 2 Treatment

6. Pour Rhiel Algae Inhibitor directly into the water; use 16 oz. per 10,000 gallons.
7. Vacuum pool.
8. Check filter pressure and backwash if necessary.
9. Continue to maintain your sanitizer level at the high side of normal (free chlorine of 3.0) during treatment for algae infestation.
10. Run filter continuously.

Black Algae

Some types of algae, especially black algae, are very stubborn and require special treatment. Black algae form a protective coating which makes it highly impervious to shock treatments and algaecide. The best treatment for black algae is to scrub the affected areas or spots prior to chemical treatment so the shock and algaecide will have an opportunity to penetrate the algae spores.



If your algae problem is extreme you should bring a quart water sample to our store for analysis and recommendation. The following treatment is for mild or early stages of algae development.

Day 1 Treatment

1. Remove solar cover and discontinue use during treatment of active algae growth.
2. Vigorously scrub algae spots with a maintenance brush- use nylon bristles on a vinyl pool.
3. Check pH and Alkalinity, adjust if necessary.
4. Shock pool with Burn Out Extreme using 1 lb. per 6,000 gallons of water. This should be added after sundown and when the pool is not in use. Pre-dissolve in a clean bucket of pool water outside. **ALWAYS** add chlorine to water NOT water to chlorine. **DO NOT** inhale as fumes will be very strong. **NEVER** mix with any other chemicals! SoftSwim USERS* remember you CANNOT use chlorine or non-chlorine shock and must always use the SoftSwim Shock.

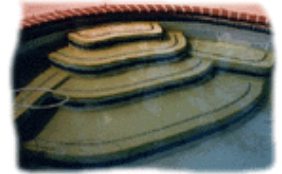
Day 2 Treatment

5. The following morning pour Rhiel Algae Inhibitor directly into the water near or over the visible algae growth, apply 16 oz. per 10,000 gallons.
6. Vacuum pool, concentrating on affected areas.
7. Check filter pressure and backwash if necessary.
8. Continue to maintain your sanitizer level at the high side of normal (free chlorine of 3.0) during treatment for algae infestation.

9. Continue to brush walls and vacuum, clean filter as necessary and add maintenance algaecide until pool is clear of all signs of visible algae.
10. After fighting a stubborn algae problem such as black or mustard algae it is recommended that you thoroughly clean your filter media, brushes, vacuum head and hoses. If algae spores remain in any of these areas they can re-infest the pool.

Mustard Algae

This type of algae brushes off very easily, in fact too easily. It is NOT, however, an easy form of algae to get rid of. When brushing the mustard algae tend to just spread throughout the pool. There are a variety of algaecides made specifically to combat mustard algae- use the type recommended by your pool professional along with aggressively shocking your pool, as mustard algae is resistant to normal chlorine levels.



If your algae problem is extreme you should bring a quart water sample to our store for analysis and recommendation. The following treatment is for mild or early stages of algae development.

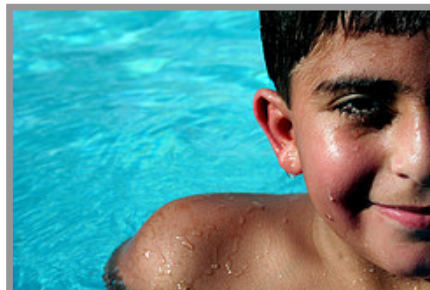
Day 1 Treatment

1. Remove solar cover and discontinue use during treatment of active algae growth.
2. Check pH and Alkalinity, adjust if necessary.
3. Shock pool with Burn Out Extreme using 1 lb. per 6,000 gallons of water. This should be added after sundown and when the pool is not in use. Pre-dissolve in a clean bucket of pool water outside. **ALWAYS** add chlorine to water NOT water to chlorine. **DO NOT** inhale as fumes will be very strong. **NEVER** mix with any other chemicals! *SoftSwim USERS* remember you CANNOT use chlorine or non-chlorine shock and must always use the SoftSwim Shock.

Day 2 Treatment

4. The following morning Pour Rhial Algae Inhibitor directly into the water near or over the visible algae growth, apply 16 oz. per 10,000 gallons.
5. Vacuum pool
6. Check filter pressure and backwash if necessary.
7. Continue to maintain your sanitizer level at the high side of normal (free chlorine of 3.0) during treatment for algae infestation.
8. Clean filter as necessary and continue to add a maintenance algaecide until pool is clear of all signs of visible algae.

After fighting a stubborn algae problem such as black or mustard algae it is recommended that you thoroughly clean your filter media, brushes, vacuum head and hoses. If algae spores remain in any of these areas they can re-infest the pool.



CLOUDY WATER

Cloudy water can be caused by a number of conditions, check in the following order:

- **Insufficient filtration-** Make sure your filter is clean and functioning properly. Perhaps your filter is due for a more thorough cleaning than backwashing alone will provide. [See Filtration](#) for more details on manually or chemically cleaning your filter. Has your pool been circulating 24 hours a day? For optimum water clarity and ease of maintenance you should run your filter continuously.
- **Unbalanced Water-** High ph (above 7.8), high Total Alkalinity (above 200), high Calcium Hardness (above 500) are all capable of causing cloudy water. Test your water and enter the results under Water Analysis to determine if you need to make adjustments and balance your water.
- **Low Sanitizer level-** Sanitizers can be consumed rapidly, especially in high heat and heavy bather loads. A low sanitizer residual can also allow for algae growth, which in the early stages can appear as cloudy water. Shock your pool with SPARCO Wipe Out non-chlorine oxidizer or Burn Out Extreme chlorine shock, using 1 lb. per 10,000 gallons of water. SoftSwim users shock using 1 gallon of SoftSwim Shock per 10,000 gallons.

TREATMENT

After running your clean filter, balancing and shocking your pool water you may still find the need to add a clarifier recommended by Rhiel Supply. Clarifiers will help filter out suspended particles that cannot be oxidized by attracting small particles together making them large enough to be trapped by the filter. Be sure to read and follow the bottle's instruction label.

In extreme cases of cloudy water your Rhiel Supply professional may suggest a **Flocculant**. Floc is used as a coagulant and a settling agent for turbid water. It attaches to free floating matter in the water to form larger, heavier-than-water particles, which settle to the bottom of the pool. Read and follow the label directions carefully. After the debris has settled to the bottom, vacuum the pool on the waste or drain cycle (see filtration) to rid the pool of the unwanted matter. This will mean water loss, so carefully consider this option prior to treatment and do NOT drain your pool without consulting a Rhiel Supply representative first.

Remember you can always bring a pool water sample to our store for a professional water analysis Free of charge.



STAINING AND SCALING

All water contains some levels of minerals and metals. When the minerals or metals are dissolved and in suspension they are not visible. If they precipitate, or fall out of suspension, staining or scaling can result. Metals such as copper, iron or manganese in sufficient quantities can all cause staining. Prior to treating a stain you must first determine the cause. Algae or bacteria can cause green, black, yellow, brown or pink discoloration. These organic deposits can generally be distinguished from mineral or metal staining by their response to chemical treatments (sanitizer and algicide) and in most cases can be removed with a vigorous brushing (although they may grow back), see [Algae](#) for more information. Leaves, worms and other organic material left in the pool can also cause staining. This type of staining will usually respond to a sanitizer and a follow up stain remover.

Ruling out the above, one can assume that the discoloration, throughout the water or in deposits, is caused by metals or minerals that have oxidized or dissolved and have precipitated (come out of solution). Unbalanced pH, Total Alkalinity and the addition of sanitizers are all possible causes for such precipitation. High levels of metallic salts such as calcium or magnesium in suspension may cause cloudy water. When they form hard white deposits or crystals on the pool surface it is referred to as scaling. Heavy metals like copper and iron will cause discoloration or when deposited, staining. Green usually indicates copper or iron, red and brown –iron, black or brown -manganese.

See [Specialty Chemicals for Stain Preventatives and Treatments](#). As with all water problems, prevention is preferred to treatment. The best way to prevent staining is to have your pool water tested at Rhiel Supply on initial fill and every spring **PRIOR** to the addition of ANY pool chemicals. Often the original source water that you use to fill your pool may contain iron or other metals or minerals that are not visible to the naked eye. If a test reveals the presence of metals you will need to add SimpleBlue Stain & Scale Remover. This chemical helps bind the metals together so they will not precipitate. For each 1 ppm of metals present in your water, add 1 pound of Stain & Scale Remover per 10,000 gallons of water. With pump running, pour directly into skimmer and filter for 24 hours. The following day you should clean your filter media to remove the filtered metal or mineral impurities. Cartridge Filters: Hose off cartridge thoroughly, repeat at 48 hours. D.E. Filters: Replace D.E. Sand Filters: Backwash/Rinse and immediately repeat Backwash/Rinse. Some pool water will require regular additions of these chemicals, especially after the addition of make-up water- add 3 oz. per 2,000 gallons of water for every 1 ppm of metals present.



Another key in preventing precipitation is to follow the chemical guidelines for adjusting pH and Total Alkalinity. High, rapid fluctuations can cause precipitation. Corrosion of metal equipment components due to unbalanced pH and Total Alkalinity can also cause dissolved metals to precipitate in the water. To prevent staining or scaling remember the following:

- Have your water professionally tested for metals- results should be 0 ppm.
DO NOT ADD ANY CHEMICALS UNTIL THIS TEST IS PERFORMED
- If metals or minerals are present, at start-up and when adding make-up water add Stain & Scale Remover **PRIOR** to other chemicals.
- Follow water balance guidelines for pH, Total Alkalinity, TDS and Calcium Hardness. Add pH and Total Alkalinity adjusters following the application directions closely. **DO NOT** add too much chemical or make too rapid of an adjustment in a short period of time or precipitation can result. Always balance water **FIRST**- before adding sanitizer or shock treatments.
- Poor filtration will accelerate metal precipitation, run your filter 24 hours a day.

WATER MOLD OR PINK SLIME

Pink slime or pink algae are actually not algae but a bacteria or fungus, often appearing as streaks or spots in corners and crevices. Sometimes it appears as a pink or orange colored ring around the skimmer or waterline. Water mold may have different appearances. It may appear as raised white spots or as sheet-like growth on the pool's surface. It will have a slippery feel and may appear as different colors. Water mold is caused by the build-up of a slime coating produced by microorganisms on exposed surfaces. These microorganisms are constantly introduced into the environment and will begin to grow when conditions become favorable (that is, low sanitizer, poor house keeping, etc.). The film that is generated as these organisms grow makes them particularly difficult to treat as the slime that results affords the organisms(s) protection from the sanitizer. Water mold is nonpathogenic (does not cause disease) and, like algae, your pool can be sanitized and safe to swim in with water mold present. Also like algae, water mold originates from the environment around your pool. One common way of introducing water mold into a pool is by placing a pool cover on the ground where it comes in contact with soil that contains the mold. When the cover is placed on the pool, the mold is introduced into the pool. It is always best to fold a cover and drape it over a chair or railing. Cold may slow its growth but will not kill water mold.

Regular brushing and vacuuming usually keeps water mold and pink slime from growing in your pool. But there are places in a pool where proper attention is not always given such as behind lights, under ladder treads, nooks and crannies, a dirty filter, etc. Poor circulation is probably the biggest culprit. Water mold likes to grow in "dead spots." These are places that water does not readily circulate to and therefore the water becomes stagnant.

TREATMENT

The best overall treatment for Pink Slime or water mold is to remove its food source.

1. Remove solar cover and discontinue use during treatment of active algae growth.
2. Filter continuously.
3. Check pH and adjust if necessary, to achieve a 7.2 to 7.8 reading.
4. Shock pool with appropriate shock and wait 24 hours.
5. Apply White River PHOS-AWAY according to directions on bottle. Turn off pool pump. Attach spray bottle to garden hose. Turn lever to ON position. Turn garden hose ON & spray entire contents over pool surface. Allow phosphates to settle to bottom of pool for 24 hours.
6. Turn pool pump ON & **slowly** vacuum with filter valve in **Waste** position.
7. Turn OFF pump and return filter valve to Filter position.
8. Fill a 5 gallon bucket with approximately 4 gallons of pool water. Add 1 capful of White River Aqua Doctor per 1,000 gallons of pool water. Using a pool brush, scrub affected area with contents of pail. After scrubbing, dispense $\frac{3}{4}$ of pail around perimeter of pool. Pour remainder directly into skimmer. Pool will become cloudy until filter is able to catch up (usually 2-3 days).
9. Add White River Pool Pizazz according to directions on bottle, 1 capful per 8,000 gallons.

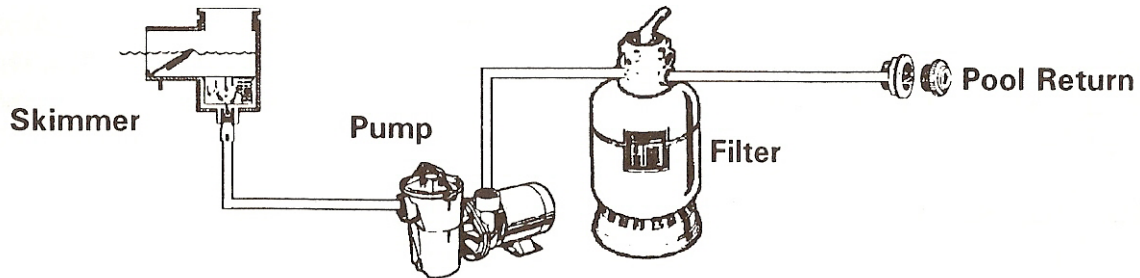
Trapped slime (in hoses) will release and enter into pool water. You should use a pool net to capture debris before it reaches the skimmer.

If problem persists repeat White River Aqua Doctor treatment.

Slime is a spore that is capable of developing into a new individual. Discontinuing treatment with White River Pool Pizazz can cause re-infestation to occur.

CIRCULATION

Clean, clear, healthy pool water is achieved through proper water chemistry, sanitation and circulation. Circulation occurs as water travels into the skimmer, passes through the plumbing to the pump, is filtered and returned via the return inlet of the pool. The pump must be on for the water movement to take place; which should run 24 hours a day. Moving water allows your sanitizer to work more effectively, helps prevent dirt build-up and algae, and allows your filter to effectively remove dirt and debris.



The skimmer body contains a basket for catching leaves and debris before they enter the pump and possibly clog the impeller area. You should check the basket regularly (every few days) and empty as needed. If your basket becomes cracked it should be replaced. There are many styles and sizes of skimmers available. Be sure to save yourself an extra trip by bringing your old skimmer basket with you. The skimmer “skims” the water surface by pulling surface debris from the water. Your skimmer will work most effectively when the water level is $\frac{1}{2}$ to $\frac{2}{3}$ up on the skimmer opening and the weir door is in place. This door flaps in and out of the skimmer opening -drawing floating debris into the skimmer. The door simply snaps into place in the skimmer mouth and should at all times move freely to allow unrestricted water flow into the skimmer. Check and maintain your water level often and add make-up water if needed. If the water level drops below the skimmer the pump will draw in air and cavitate, potentially causing serious damage to the pump and motor by allowing it to run dry. Manual vacuuming is performed through the skimmer. Go to [Vacuuming](#) section of the manual for detailed instructions.



After the pool water passes through the filter tank it is returned to the pool via the return inlet fitting. Most return fittings have a directional eyeball fitting to direct the flow of water back into the pool. For best results, the eyeball should be positioned so that the water is forced in a circular motion towards the pool bottom. This will promote more even circulation and result in a cleaner pool.



PUMP & MOTOR



Your pool water circulates as a result of your pump and motor. Your pump should operate 10-12 hours a day. If you begin to experience a water problem, cloudy water or algae present, run the pump longer and filter the water 24 hours on high speed, if necessary. Optional automatic timers are a convenient way to control run-times.

Your pump has a suction side and a discharge side. The pump housing holds an impeller that pushes water to the discharge side of the pump, where it then flows through the filter for cleaning and then it goes back to the pool through the return fitting.

Most pumps have a lint strainer where the water enters the pump. The pump strainer basket is usually positioned under a clear lid, so you can literally see if it contains any debris. You will have to check the pump basket regularly and clean it out with a hose. The lid on the lint strainer holds an o-ring that must be lubricated with an o-ring lubricant from time to time to ensure a good water tight seal. **DO NOT** use vaseline® on o-rings as the petroleum can break down the rubber. When worn, cracked or stretched the strainer lid o-ring will not seal properly which can allow air into the lines causing pump to not hold prime and air bubbles in return inlet. Inspect the o-ring for wear and replace as needed.

Your pump will have (1) or (2) ¼" drain plug(s) threaded into the lint pot and or pump housing; the drain plug is used to drain water out of the pump for winterizing. If your plugs come with o-rings you should keep them lubricated to keep air from entering the pump and losing prime.

Priming

Priming your pump (removing air and filling with water) may need to be done manually. Most above ground pumps are not self priming and occasionally inground self priming pumps may still need to be primed. At times the pump will lose its prime if the pump is higher than the water level in the pool, if it has been winterized or after cleaning your pump basket. If you need to prime your pump use the following steps:

- ✓ Check water level in the pool is at the half-way point on the skimmer.
- ✓ Check the skimmer basket –empty if needed.
- ✓ Make sure the drain plugs are installed in the pump.
- ✓ Check that any valves leading to pump are in the open position
- ✓ Remove the lid from the lint strainer at front of pump.
- ✓ Take a garden hose and put it into the pump housing. Fill the pump housing, which should automatically fill the suction line.
- ✓ When water flows out of the pump housing remove the hose.
- ✓ Put the lid back on the pump over the basket area. Check the lid O-ring is in place so that no air gets into the pump housing.
- ✓ Quickly turn “on” the power to the pump.



Watch the lid on the pump and see if the water has started to come in, this should take a minute or less, if after a minute you don't see water and the clear lid is starting to fog up, then turn "off" your pump and repeat the above steps. The motor is what powers the pump to circulate water. The motor is the electrical side of the pump; it is located opposite of the pump housing. Most above ground pump & motors have 110v electrical plugs. They should always be plugged into a GFCI receptacle. You should NOT run the motor off of extension cords as this is an electrical hazard and is also detrimental to the motor itself. Inground Pumps can be 110v or 220v and are generally hard wired. Motors are designed and built for maintenance free operation. In order to keep your motor operating smoothly and extend motor life you should follow these general maintenance guidelines:

- ✓ Keep the area in and around the motor clean. Excessive dirt in the area can be pulled into the motor, resulting in shortened motor life.
- ✓ If the motor is being stored when not in use, be sure that all surfaces are dry to prevent rust. If left outside, the motor should be covered to guard against blowing leaves, dirt, and snow. DO NOT SEAL THE MOTOR IN AIR TIGHT MATERIALS. Condensation may form, causing bearing and insulation damage.
- ✓ Keeping the motor cool is most important. Ambient temperatures should not exceed nameplate markings. Provide shade from direct sunlight. The area around the motor should be large enough to provide ample cross ventilation.

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Click on the pump listing below to view the complete operating manual

[Pool Pump Manual](#)



FILTRATION

Adequate filtration is the one of the most important elements of your pool. Chemicals alone do not keep the pool water clean. It is the combination of chemicals, circulation and filtration that keeps your pool water clean and clear. The importance of proper filtration cannot be overemphasized in the overall program of sound pool maintenance and sanitary water. Proper circulation and filtration of the water is one of the best defenses against algae formation and cloudiness. The filter system comprises the complete filter and pump and motor. The filter is passive and requires the pump and motor to pass water through it for cleaning. There are three basic types of filter systems: Sand, Cartridge (Element) and Diatomaceous Earth (D.E.). Each system has certain advantages as they all differ slightly in operation and the type of medium that actually filters the particles (medium refers to the actual sand, cartridge or D.E. inside of the filter tank). Filter types vary in popularity in different areas of the country. There are certainly pros and cons to each type, although all of the filters are quite capable of providing excellent results with proper instruction and maintenance.

CARTRIDGE



DIATOMACEOUS EARTH (D.E.)



SAND



Circulation begins as water flows through the in-wall skimmer and into the pump & motor. It then is pushed into the filter tank where dirt and debris are trapped in the filter medium. Clean water then exits the tank through a return hose or plumbing to the pool through the return inlet. Regardless of the type of filter system you have you should operate your system 24 hours per day. As dirt and debris accumulate within the medium of the filter tank the pressure gauge on the tank will begin to rise and the return flow of water going back to the pool will simultaneously diminish. When the pressure gauge increases 8 to 10 psi above the normal starting pressure it is then time to backwash the filter. Refer to the operating instructions for each system type on the pages to follow. Be certain to read and follow all manufacturers' instructions on operation and winterizing prior to start-up.

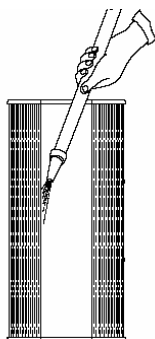


The following pages contain specific information on [Cartridge](#), [Diatomaceous Earth](#) and [Sand Filters](#). This is where you will find parts breakdowns, troubleshooting information and operating manuals for your filter system. You can view or print the filter information using the upper toolbar on your screen simply click on file, print. Once you have opened a new screen (for example you have clicked on an operating manual for your Meteor Sand filter) you can return to the Pool Manual by using the green navigation arrows at the bottom of your screen on the Adobe toolbar. When you want to return to the main menu simply click on the X in the upper right corner to close Adobe Reader and return you to the menu.

CARTRIDGE FILTERS

Cartridge filters use one or more pleated elements or cartridges as the filter media to collect dirt and debris. Their unique advantages are minimal maintenance and less water loss than filters requiring backwashing. The cartridge element itself is removed and cleaned, as needed. Cartridge filters utilize the debris they collect as an aid to improve filtration. As a result, cleaning too often does not allow the filter to work at optimum filtration efficiency, while not cleaning often enough will shorten the life of a cartridge element. When the pressure gauge rises 10 psi above the “normal” or starting reading, you should follow the steps below to remove and clean the cartridge element or follow the manufacturer’s instructions provided with your filter. The cartridge elements will generally last 3 years before needing to be replaced (or when cleaning no longer allows adequate flow and reduced pressure).

General Cleaning Instructions for Cartridge filters



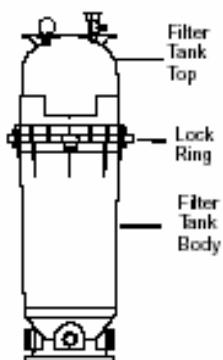
1. Shut off pump & motor.
2. **IMPORTANT** Release pressure in the tank by loosening the air relief bleeder valve.
3. Squeeze tabs on black ring in middle of the filter and unscrew lock ring off of filter.
4. Remove filter top or lid.
5. Remove cartridge element and thoroughly hose element top to bottom holding the nozzle at a 45 degree angle, and wash all the pleats with emphasis between pleats using a high-pressure hose.
6. Replace filter top and secure lock ring.

Chemical Cleaning- Periodically you will want to chemically clean the cartridge- follow steps 1-5 above then:

1. SimpleBlue users should use SimpleBlue Filter Cleaner, Chlorine and FROG treated pools should use White River FC-5 Filter Cleaner and SoftSwim treated pools use SoftSwim Filter Cleaner according to label directions.
2. Rinse cartridge element and replace in tank.
3. **IMPORTANT** Release pressure in the tank by loosening the air relief bleeder valve.
4. Replace filter top and secure lock ring.

WARNING

THIS FILTER OPERATES UNDER HIGH PRESSURE. WHEN ANY PART OF THE CIRCULATING SYSTEM (E.G. LOCK RING, PUMP, FILTER, VALVES, ETC.) IS SERVICED, AIR CAN ENTER THE SYSTEM AND BECOME PRESSURIZED. PRESSURIZED AIR CAN CAUSE THE LID TO BLOW OFF WHICH CAN RESULT IN SEVERE INJURY, DEATH, OR PROPERTY DAMAGE. TO AVOID THIS POTENTIAL HAZARD, FOLLOW THESE INSTRUCTIONS.



1. Before repositioning valves and before beginning the assembly, disassembly, or adjustment of the lock ring or any other service of the circulating system:
 - A. Turn the pump OFF and shut OFF any automatic controls to assure the system is not inadvertently started during the servicing.
 - B. Open air relief valve; and
 - C. Wait until all pressure is relieved- pressure gauge must read zero (0).
2. When installing the filter lock ring, follow the lock ring installation instructions exactly.
3. Once service on the circulating system is complete, follow system restart instructions exactly.
4. Maintain circulation system properly. Replace worn or damaged parts immediately (e.g. lock ring, pressure gauge, relief valve, o-rings, etc).
5. Be sure that the system is properly mounted and positioned according to the instructions provided in the filter system owner’s manual.

Click below to view or print the complete owner’s manual

[Pool Filter](#)

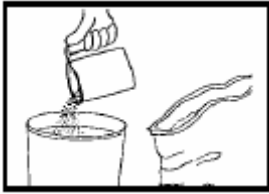
DIATOMACEOUS EARTH (DE) FILTERS

Diatomaceous Earth (DE) is a fossil material ground into a very fine white powder. DE filters contain grids inside. The DE powder coats the internal grid. Water passes through the DE coated grid which strains dirt, algae and some forms of bacteria from the water. DE filters will trap the finest particle of the 3 filter types but this also means that the filter needs to be cleaned more often. When the filter pressure gauge reads 10 psi over the starting pressure the filter should be cleaned of the old DE and dirt that has collected inside of the filter following the instructions below. Adding new DE called "charging" the filter is done on initial start-up and after cleaning. The amount of D.E. used to charge your filter can be found in the chart below.



ALWAYS open the air bleeder valve each time you are starting up your system to relieve pressure in the tank and rid the system of air.

Adding DE (Charging the filter)



On initial start-up and after cleaning your DE filter, the DE powder will need to be replaced, this should be done within 2 minutes of the filter running. Find the proper amount of DE needed for your filter from the chart below. The DE powder is measured in pounds or DE scoops, available at Rhiel Supply. Add the specified amount of D.E. powder into a clean bucket of water and pre-mix before pouring slowly through the

skimmer 1 lb. at a time with the pump running. **DO NOT** allow the system to run longer than 2 minutes without D.E.

Cleaning

As the pressure builds and the flow becomes less, it means that the D.E. powder is becoming saturated with dirt. When the pressure increases 10 psi above the normal starting pressure you should clean the system following the instructions below. If the pool is very dirty or has a lot of algae, the filter may require frequent cleaning, as the D.E. will saturate very quickly.



Cleaning the DE filter (chemically cleaning)

If the filter pressure reading remains high AFTER the filter has been cleaned and charged with fresh DE and the pool water is clean and clear you may need to chemically clean the grids inside the tank. A chemical filter cleaning is generally required once to twice a season- often at pool closing time. Please refer to your filter operating manual below for complete details on chemical cleaning. Pools using the SoftSwim program should chemically clean their filters every 4 weeks using SoftSwim filter cleaner.

SoftSwim USERS PLEASE NOTE: Special care must be taken when cleaning filter grids used in a swimming pool using SoftSwim (or any biguanide) as a sanitizer. Because of the way SoftSwim and other biguanides work, the filter elements must be cleaned more thoroughly and more frequently than with other treatment programs. Every 4 weeks use SoftSwim Filter Cleaner. If extreme care is not taken to completely remove all residue from the filter grids a buildup will occur. This buildup will significantly shorten the life of the filter grids. See your Rhiel Supply professional for more details.

SAND FILTERS



Sand is the oldest and most popular method of filtration. Water passes through the pump housing and enters the sand filter through the multiport valve head, which controls the directional flow of the water. As water passes through a bed of filter sand (silica quartz) dirt is trapped in the sand bed and clean, filtered water is returned to the pool. Your filter should operate 24 hours a day. When the filter becomes dirty- pressure builds in the sand filter and the water flow returning to your pool decreases. When you initially start your sand filter you will want to make a mental note of the “normal” or “starting pressure”, when your pressure gauge increases 10 psi from that point you should clean the sand by backwashing the filter.



Backwashing involves reversing water flow through the filter and sending dirt through a waste line. A valve on the filter tank will direct the water to control backwashing and other functions. When using a rotary multiport valve on a sand filter be sure to shut off the pump and motor before changing valve positions. The o-ring inside of the valve, tank and pump and motor should be lubricated at least once each season with an o-ring lubricant. DO NOT use vaseline® as the petroleum can breakdown the rubber material)

Before attempting to start the filter system for the first time be certain that the water level is at the proper level, a minimum of ½ way on the skimmer opening, and that the pump is primed; [see pump and motor](#) for details on priming your pump. New filter sand has a fine dust that should be backwashed and rinsed prior to running on normal filtration. The following are GENERAL guidelines for operating your sand filter. Detailed instructions on the operation of your sand filter can be found in your filter operating manual on the following pages.

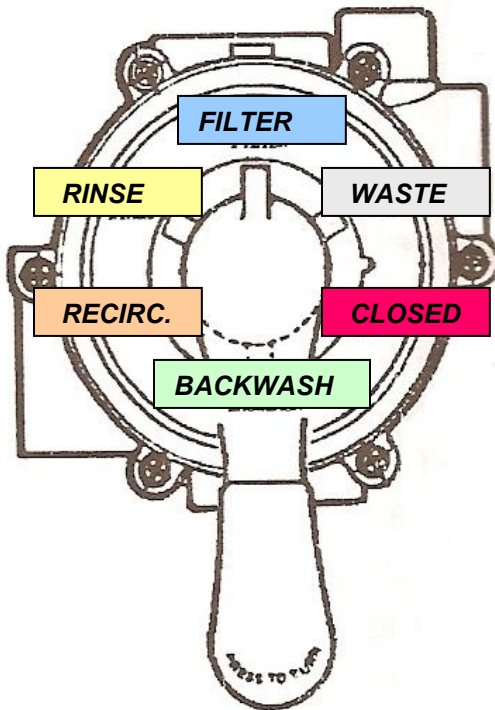
START UP

1. Set up the system on its base.
2. After removing the valve, fill the tank approximately halfway with water.
3. Cover the center standpipe and slowly add the specified amount of sand *see owners instructions. DO NOT use play sand- use only swimming pool filter silica sand.
4. Replace valve and seal tank.
5. Connect the hoses from pool and inlet to valve head, use screw clamps to tighten.
6. Turn valve handle to backwash and turn on pump and motor for 30 seconds to one minute. This will flush out system prior to circulating.
7. Stop motor and set valve to rinse. Turn on pump and motor for an additional 30 seconds.
8. Stop motor and set valve to filter. You are now in normal operation.
9. Open air relief bleeder valve and start pump and motor. When water sprays from air relief you can hand tighten.
10. Note the reading on your filter’s pressure gauge. This is your normal starting pressure.
*you will reference this number when you need to backwash your filter.



Your sand filter is equipped with a 4 position or 6 position multiport valve. The 4 position valve has Filter, Backwash, Recirculate and Waste positions. The 6 position includes these positions and also offers a Rinse and Closed setting- see details on each setting, below. Each multiport valve is equipped with an external air bleeder device. **Always** open this air bleeder and stand clear of filter and valve before starting the system pump and leave open until a steady stream of water is expelled. **CAUTION: To prevent equipment damage and possible injury, always turn pump off before changing valve position.** The valve has a closed position. The pump should never be on when the valve is in the closed position. If the pump is operated with the valve closed, the air relief system becomes inoperative and an explosive situation could exist. Additionally, running the system with no flow will seriously damage the equipment.

VALVE OPERATION



1. **FILTER POSITION**- This is the process by which the water from the pool passes through the filter tank and the sand. As the water trickles down through the sand, the dirt and debris are trapped by the sand, thus filtering the water. The filter should be operated a minimum of 8 hours a day.
2. **BACKWASH POSITION**- This process is used to clean the debris that has accumulated, out of the sand. The water is essentially moving in a reverse fashion. This should not be done for more than one minute at a time, and should be done when the flow of water back to the pool has slowed considerably and the pressure gauge has doubled the original normal starting pressure.
3. **RINSE POSITION** - This is done after backwashing to settle the sand and cloudy water inside the tank caused by backwashing, so sediment will not pass back into the pool.
4. **RECIRCULATE POSITION**- Water is passed from the skimmer to the pump and then up to the valve; however, instead of passing through the sand, it passes through the valve head and then back into the pool. Re-circulate is used to circulate chemicals without filtering; this will simply circulate the water throughout the pool.
5. **WASTE POSITION**- this function is used when one desires to draw water or vacuum debris from the pool directly onto the ground (bypassing the tank). For example, if there is a lot of debris accumulated on the floor of the pool, one would use this process to vacuum it from the pool onto the ground; bypassing the filter tank.
6. **CLOSED POSITION**- this position is used when one wishes to shut off water flow through the valve. The valve is left in this position for winter closeup, since it shuts off all of the passageways through the valve.

REMEMBER NEVER CHANGE VALVE POSITIONS WHEN PUMP & MOTOR IS RUNNING

BACKWASHING

When the return flow diminishes and your filter pressure gauge reads 10 psi higher to double the normal starting pressure it is time to backwash. The actual time between backwashing will vary depending on the amount of dirt in the pool and clarity of the water; on average you may expect to backwash every 10 days to 2 weeks.



When it comes to backwashing, more is NOT better. As dirt accumulates inside of the filter tank it is actually able to filter smaller particles. Backwashing too frequently will decrease your filter's efficiency.

STEPS TO BACKWASH

1. Turn off pump and motor.
2. Turn valve handle to backwash position.
3. Open backwash gate valve (optional)
4. Turn on pump and motor, run until water is clear in sight glass.
5. Turn off pump and motor.
6. Turn multiport valve to rinse position.
7. Turn on pump and motor for an additional 30 seconds..
8. Turn off pump and motor.
9. Turn multiport valve to filter position.
10. Open air relief bleeder valve.
11. Close backwash gate valve (optional)
12. Turn on pump and motor.
13. Close air relief bleeder valve.

Sand should be replaced every 1 to 2 seasons. When replacing sand use only swimming pool filter quartz referred to as #20 silica sand. DO NOT use play sand. When replacing sand be careful of the bottom laterals (slotted tubes) at the bottom of the filter tank. Check laterals for cracks and replace if necessary.

Click below for filter owner's manual

[Pool Filtler Manual](#)



VACUUMING


To keep your pool clean it will be necessary to vacuum the pool floor to remove dirt and debris. When vacuuming you are using your pool pump with vacuum attached to skimmer to pull dirt and debris from the pool floor to be trapped inside of your filter-returning the water back to the pool. You should vacuum your pool on a regular basis, generally once a week- or as needed. If you're looking for a little less maintenance there are a variety of automatic cleaners available today for all pool types and budgets. Your Rhiel Supply professional will be happy to recommend a pool cleaner that is right for you.



[Click here to see how to manually vacuum your pool](#)

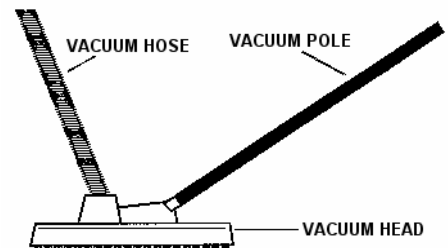
Your manual vacuum consists of a vacuum head, vacuum hose, telescopic pole and (optional) skim-vac plate. The vacuum head attaches to the telescopic pole, the hose slips onto the vacuum head on one end- (if you have a swivel end on your hose attach the swivel cuff end to the vacuum head) the other hose end will slip onto the skim-vac or directly into the suction opening in the skimmer- follow the steps below before attaching the vacuum hose in the skimmer or skim-vac.

Before vacuuming you should:

- ✓ Check the water level- should be at the ½ way point of skimmer opening. A lower water level could cause the pump to loose prime while vacuuming.
- ✓ Check the skimmer basket- empty if needed. The skimmer basket will remain in place when using a skim-vac. The skim-vac will sit over the skimmer basket with a fitting in which to attach your vacuum hose. If you are not using a skim-vac you will need to remove the skimmer basket in order to connect the vacuum hose to the suction opening. 
- ✓ Check the pump strainer basket-clean if necessary.
- ✓ Check the filter pressure- backwash if necessary.

You are now ready to prime the vacuum hose:

- ✓ Submerge the vacuum head (already attached to pole and hose).
- ✓ With the filter running hold the free end of hose in front of the return wall fitting to purge the hose of any air and fill with water. When you no longer see any air bubbles coming from the vacuum head the hose is primed.
- ✓ Hold the hose underwater to maintain the prime while connecting to the skimmer. The hose can usually fit through the front of the skimmer opening (weir door may need to be removed) where you can slip onto skim-vac plate or insert into suction opening. Some skimmers have a suction port below the mouth of the skimmer in which you can attach your vacuum hose.



You are ready to vacuum:

Move the vacuum head slowly and gently to thoroughly clean your pool and not “stir” up debris. It is normal for the pressure reading on your filter’s gauge to drop while vacuuming- as the water flow is being restricted through the vacuum head and hose. You should not, however, notice a decrease in the return flow. If while vacuuming the suction decreases check the strainer baskets (in skimmer and pump) and empty if necessary. If the baskets are clean and suction is still diminished the filter may need cleaned or backwashed- you will notice a decrease in the return flow at this time. When vacuuming large amounts of dirt or debris it may be necessary to clean or backwash during the vacuuming process.

During spring clean up, after an algae problem or heavy dirt/debris you may want to consider vacuuming to waste. If your filter type allows for this option the water being vacuumed from the pool would be discharged through a waste or backwash line out of the pool vs. circulating through the filter. You will lose a considerable amount of water doing this and should

If you are experiencing air bubbles coming from the return inlet or low suction (and filter does not require backwashing) you may have an air leak on the suction side.

- ✓ Check the vacuum hose itself for pinholes or cracks that could be sucking air, check the connection at the skim-vac or skimmer- is the hose still submerged
- ✓ Check the pump housing is it filled with water? The strainer lid on the pump housing holds an o-ring that should be checked as well. Lubricate with an o-ring lube from your pool dealer. If o-ring is worn, cracked or stretched replace it. A filter system that is running fine can sometimes show air leaks when the suction is increased during vacuuming.



To keep your pool looking great, effortlessly, be sure to check out our Automatic Cleaners on the following pages.

AUTOMATIC POOL CLEANERS

There are a variety of automatic pool cleaners available today that will keep your pool looking great, while saving you time. Your Rheil Supply professional can recommend the type of cleaner and brand best suited to your pool type and budget. Automatic cleaners not only remove dirt and debris but also improve your pool's circulation. *Battery Powered Hand Held* cleaners use rechargeable batteries; *Suction Type* use the suction from your pool pump and motor; and *Robotic Type* are self-contained, electric powered cleaners.

DO NOT coil the vacuum hose from any automatic cleaner into a circle - store straight. A coiled hose will create a memory that can impede the performance of your automatic cleaner.



Battery Powered (Self-contained) These battery-powered, hand held cleaners snap onto any telescopic pole and require no installation or assembly. By using a rechargeable battery and a reusable, easy-to-clean filter bag, they collect leaves, hair, dirt, and even sand; silt and algae which means dirt and debris stay out of your filter.

[iVacAquaBroom](#)

[iVacC2](#)

[iVacM3](#)



SUCTION TYPE Suction type cleaners attach to your skimmer using the filtration system of your pool, working from the suction side in the same way you attach your manual vacuum. The dirt and debris collected by suction cleaner is drawn into the pool filter. Operating from your existing equipment, these automatic cleaners move effortlessly with no additional costs. They aid in your pool's circulation by dispersing chemicals and water temperatures from bottom to top more efficiently.

[Dirt Demon AG](#)

[ZapVac](#)

ROBOTIC CLEANERS This category of cleaners operates completely independent of your pool's pump / filtration system and without the cost of installation or booster pumps because robotic cleaners have their own pump motor and reusable filter system built-in. The robot's internal filtration enables reduction of debris entering the main pool filtration system, thus decreasing the amount of debris to the main filter by as much as 80%, saving 1,000's of gallons of water annually. Additionally, robots can scrub your pool clean as it vacuums and filters (so you won't have to) all while saving you money and time. Their powerful circulation capabilities even mix warm, chemically depleted water above, with cooler chemically rich water below to provide more uniform and healthier swimming water for friends and family. The increase in water circulation will also save you money by reducing heater usage and saving energy. To operate, simply plug the compact power supply into a grounded outlet, and the thin, floating power cord into that, and these low voltage (usually just 24v) robots will automatically clean, saving time and money at the touch of a button.

[Cyclone](#)

[Z Junior Industrial](#)

[Z2 Industrial Turbo](#)

[Industrial 4WD](#)



ROUTINE MAINTENANCE



Keeping your pool physically clean is as important as the regular addition of chemicals. Debris in the pool is unsightly, increases sanitizer demand and may cause staining of the pool liner. During the swimming season, thoroughly clean your pool at least once a week. To ensure proper circulation and filtration you should run your system a minimum of 12 hours per day.

1. Maintain proper water level-2/3 on skimmer opening (you can lose up to 3" of water per week through evaporation, splash outs and back-washing.)
2. Skim pool surface with leaf skimmer as needed.
3. Brush walls and floor with proper brush weekly, this will reduce your vacuuming time.
4. Remove dirt ring from waterline with tile and vinyl cleaner weekly.
5. Clean out skimmer basket.
6. Clean out pump hair and lint basket.
7. Check filter pressure and backwash as needed- when pressure gauge raises 10 psi above or doubles the normal starting pressure. *See your filter operating manual on CD for details.*
8. Keep deck area clean near pool.
9. Check hoses and equipment and replace when needed.
10. Vacuum pool weekly or as needed. [See Vacuuming](#) for complete instructions.
11. Test your pool water using your test strips 2-3 times per week and follow a regular chemical treatment program.



VINYL LINER CARE & MAINTENANCE



1. Always maintain your swimming pool water balance at the proper levels, according to your chemical treatment program. Particularly Total Alkalinity and pH.
2. Do not let the pH of the water drop below 7.2. A low pH level can cause the liner to form wrinkles. Maintaining a proper Total Alkalinity level will help stabilize your pH reading.
3. You should avoid using muriatic acid to adjust pH or Total Alkalinity. Use pH Decrease Powder and follow the recommendations closely to avoid damage to pool liner.
4. Have your water tested by Rhiel Supply for the presence of dissolved metals or excess minerals that may be present from your water source. **ALWAYS** have your water tested **PRIOR** to adding chemicals as any dissolved metals in the water can cause staining of the walls and bottom of your pool liner when combined with chemicals.
5. Always follow exact manufacturer's recommendations when adding chemicals to your pool. If directions require diluting or dissolving a chemical be certain that you follow these directions closely. Concentrated chemicals near the waterline or pool floor can cause bleaching of the color or pattern and or damage to the liner. Don't mix chemicals together or add into the pool at the same time. Combinations of chemicals that alone would not have an affect on your liner can be detrimental when combined. Water should be circulating when chemicals are added (unless otherwise directed). [See Chemical Safety.](#)
6. When closing your pool for the season always let the water circulate for several hours (follow closing chemical directions) after the final addition of chemicals before shutting down the system. Even liquid chlorine can become concentrated in the water at the deep end of your pool and this can cause bleaching of the liner's color.
7. Be sure all organic debris (leaves, worms, etc) are removed from pool bottom prior to closing to prevent staining of the liner. Always close your pool with a properly sized winter pool cover that fits tightly around the entire edge of the pool to prevent the accumulation of debris that can cause staining. **DO NOT** use cinder blocks or other sharp edged, heavy materials to hold down winter cover- use only water tubes or an anchored safety cover.
8. **DO NOT** use abrasive cleaners or cleaning tools such as scouring powders, steel wool pads or sharp brushes on your liner. Use only a recommended tile and vinyl cleaner to clean the water line.
9. **DO NOT** drain your pool (other than directed for winter closing). Your pool should remain filled with water at all times.
10. **TIP:** It's a good idea to always leave your vacuum head or maintenance brush attached to your vacuum pole. A pole with an open end (nothing attached) can cause a puncture or damage to the liner if it ends up in the pool.
11. In the unlikely event that you would get a small hole or tear in your liner it can easily be repaired with a patch kit from your pool dealer. Simply cut a circular patch of vinyl material, apply adhesive and fold over. Once underneath the water, quickly unfold the patch and place it over the hole. Apply pressure to the patch for 1 to 2 minutes and the vinyl patch will bond to the vinyl liner creating a water tight seal.

HEATING YOUR POOL

Your pool won't contribute to your health or pleasure unless it's warm enough to swim in comfortably when you want to swim. Heating your pool will enable you to get the maximum value out of your investment by allowing you to enjoy the most comfortable water temperatures possible, allowing you to use your pool more often.



How warm you keep your pool is, of course, entirely up to you. Competitive swimmers prefer a temperature of 78° F while recreational swimmers are generally more comfortable near 80°F, the young and elderly closer to 82°F. The sun alone usually can't keep your pool water at that comfort minimum of 78°F. By having a heater to warm your water you can add substantially to the daily use of your pool and extend your swimming season.

There are several methods available to heat your pool, from the sun itself to: gas, oil and electric fired heaters, electric heat pumps and solar heating systems. Your pool professional will help you select the heating system that best suits your budget, geographic region and lifestyle. To learn more about the heating system used on your pool, click on the link below for the complete owner's manual. Remember, operating costs can be kept to a minimum by installing an efficient, properly sized heater or heat pump; using a good quality pool cover; and, of course, keeping your filter clean and your heating and filtering system well maintained.

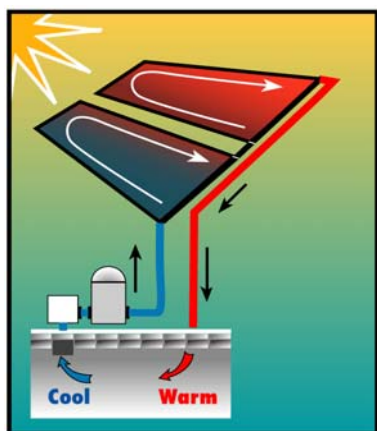
The following tips will help you conserve energy and heat your pool more economically.

1. Keep a thermometer in your pool. It will pinpoint accurately the temperature most comfortable for you.
2. Keep your thermostat at the lowest comfortable setting. Each degree more heat than needed could add more to your monthly fuel cost and use up more energy than necessary.
3. Mark the "comfort setting" on the thermostat dial. This will prevent accidental or careless over-heating and waste of energy.
4. Lower thermostat to 70°F when pool is not going to be used for three or four days. For longer periods, shut the heater off. You will save money on fuel consumption and help conserve energy.
5. Protect your pool from wind. Wind above 3 to 5 miles per hour can lower the pool temperature substantially. A hedge, cabana or decorative fence can be an effective windbreak.
6. Use a pool cover when pool is not in use. This can reduce heat loss by as much as 50%. If you are vacationing for a couple of weeks or shutting down for winter, turn the heater off completely.
7. Drain heater or heat pump completely prior to freezing weather. Freezing water inside the heat exchanger can result in costly repairs. *Read owner's manual thoroughly.*
8. Get a maintenance checkup annually. It's your best ounce of prevention. Call our service department for more details. The cost is minimal and the service will keep your heater or heat pump working efficiently for many years.

Á *Click on the link below for the complete owner's manual for your heater or heat pump*

[Heater/Heat Pump](#)

SOLAR HEATING SYSTEMS



A Sunheater™ solar pool heating system will raise the temperature of your pool water by up to 10° F (6° C). or more. It is lightweight, durable and easy to install. Water simply flows through the SunHeater's many tubes via your existing pool pump where it is heated by the sun and returned to your pool (see accompanying illustration). The system can be installed on the roof of your house, shed or cabana, mounted to a rack (optional mounting kit SK43 available), or simply placed on the ground. Get the system used by hundreds of thousands of Americans – the SunHeater™ solar pool heating system – and save money on fuel and electricity bills, extend your swimming season by weeks, and get more enjoyment from your pool than ever before. Systems are available to suit all sizes of aboveground and inground pools. Your

Rhiel Supply professional will help you find the model best suited for your pool.

Using your existing pool pump, water circulates through the solar collectors, is heated by the sun and returned to the pool through the existing fitting.



Click on your Sunheater solar heating model listed below for a complete operating manual

[SUNHEATER™ S421 Above Ground Pool System](#)



SOLAR COVERS AND REEL SYSTEMS

Understanding Pool Energy Loss



For a variety of reasons, the single biggest energy conservation move that you can make is to put a cover on the pool. First, the cover reduces the heating bills by preventing heat loss. The cover can also reduce the amount of dirt and grime that enters the pool, reducing the amount of time it takes to remove them from the water through filtration or vacuuming.

A solar cover goes one step further, collecting heat from the sun, which lessens that reliance on fossil-fuel burning heaters. In addition, the cover will save on the amount of chemicals and water that need to be added. Covers can also reduce evaporation, which can waste both water and heat and increase the Total Dissolved Solids levels in the water. Some estimates say that as much as 50 gallons a day can be lost in an uncovered pool from evaporation; that's more than 18,000 gallons of water wasted each year.

Though solar pool covers are not a necessity, they are highly recommended in preserving energy and making your pool more pleasant to swim in. Please note the following tips when using your solar cover:

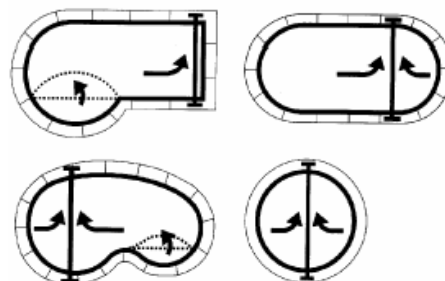
- ✓ **CAUTION:** Solar covers can pose a drowning hazard to children or pets who may try to walk across the cover. ALWAYS keep an eye on children around the pool and warn them that the cover will NOT support them and that they should not try to play on or around the pool. **DO NOT** swim with the cover on.
- ✓ Covers should float on the surface of the water- bubble side down.
- ✓ DO NOT remove your cover and lay it on the lawn. The intense UV rays of the sun will burn-out the grass very quickly.
- ✓ Leave your solar cover off immediately after shocking your pool and during treatment for visible algae or cloudy water. This will help promote the circulation and water quality of the pool as well as extend the life of your solar cover.
- ✓ When solar cover has been removed and is reeled onto a solar reel- it should be covered with the protective white plastic supplied with cover, to protect the coiled cover from gathering heat in the sun and possibly sticking together.
- ✓ DO NOT leave your pool covered for 3 to 4 days or more without removing the cover from time to time to promote circulation and reduce algae growth. This includes vacation time- leave your cover OFF while away.



Solar reel systems are available for all styles of pools; above ground, inground and custom shapes. This illustration below shows how a solar reel can be placed on various pool shapes.



SOLAR COVER REEL SYSTEM
PLACEMENT ON YOUR POOL



POOL OPENING

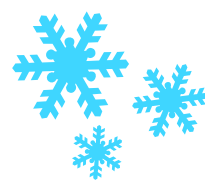
If your pool has been properly closed, and is opened early in the spring, you will find pool opening to be a fairly easy procedure. We recommend that you open your pool in April, before water temperatures increase and promote algae growth. Opening your pool early will also ensure that your pool is clean, balanced and ready for swimming as soon as weather permits.

Steps to opening your pool:

1. Remove standing water and debris from winter cover. For water removal use a cover pump or siphon. **NOTE:** if you notice the water level in the pool is dropping as you are draining water from atop the cover there may be pinholes in your cover allowing pool water to seep through- if so, stop pumping water.
2. Connect all hoses, pump and motor and filter system. See your [Filter](#) owner's manual that came with your pool for complete instructions on hooking up your filter system- clean or replace filter media if necessary. Make sure all drain plugs have been reinstalled in pump and motor, filter, chlorinator, etc. Lubricate all o-rings (pump strainer lid, filter, valves, unions, chlorinator lid, etc) with an o-ring lubricant and replace any that are worn, cracked or stretched. Be sure all equipment is in good working order.
3. After the cover has been drained, carefully remove it from the pool. This step is normally a job for a couple of people. It is important that you keep the edges of the cover from dropping into the pool or any dirt or debris will flow right into your clean pool.
4. Remove any winter plugs, closing plates or freeze protectors from skimmer or return inlets. Install skimmer basket and directional "eyeballs" in inlets.
5. Use a leaf net or leaf bagger to remove leaves and debris from water and floor.
6. Start filling the pool to 1" below the top of the skimmer opening.
7. Use White River Phos-Away per directions on bottle label.
8. Circulate continuously, at least overnight.
9. Re-install all other equipment and accessories. Check ladder for any signs of looseness or corrosion. Tighten all hardware replace any necessary fittings.
10. Once removed clean the winter cover with Stow-Away cover cleaner to prevent mildew and deterioration. Follow bottle directions, fold up cover and store away. When using Stow-Away you can store cover wet. **DO NOT** lay the cover out in yard to dry, it will burn and kill the grass very quickly. It is best to store the cover in a location where rodents cannot gain access to it.
11. Bring a quart water sample into your nearest Rhiel Supply location for a complete water analysis **PRIOR** to the addition of any chemicals (other than Phos-Away).



POOL CLOSING - WINTERIZING



A properly closed pool is a pool that will survive the winter months without freeze damage and will be easy to open come spring. The cleaner the pool is when you close it, the less work you will have at the start of the next season. When you are ready to close your pool for the season you will want to first be sure that the water is **CLEAN AND BALANCED**.



1. We recommend that you test your water and make any necessary adjustments to the Total Alkalinity and pH, **PRIOR** to adding any closing chemicals. Be sure that the pH reads between 7.2 –7.6 and the Total Alkalinity between 80-150 ppm; circulate water 2-4 hours.
2. Brush and Vacuum the pool and remove any fallen leaves or debris. Leaves left in the pool over the winter months can cause staining to the pool liner.

3. Add winterizing chemicals per Rhiel Supply

4. Protect your skimmer by:

- Using press in Skimmer Plug **OR**
- Drain the water level 1" below skimmer opening



5. Unthread the directional eyeball fitting from the return inlet and hand tighten the threaded plastic cap into the return.

5. Remove ladder and store indoors.

6. Use an air pillow underneath the winter cover. Fill the air pillow ½ full using a compressor, pump or hand held blow dryer. **DO NOT** over inflate or fully inflate air freeze pillow. You may also want to place a piece of duct tape over the air cap to help keep securely closed throughout the winter. Tie the pillow using rope into the center of the swimming pool. **DO NOT** stretch rope too tight.

7. Place the winter cover over the pool so that the cover is centered with an equal amount of over hang around the perimeter of the pool. Secure the cover by lacing the cable through the grommets and then tightening the winch. **DO NOT** hang water filled gallon jugs from the cover's grommets. The weight will destroy the cover and voids the manufacturer's warranty.



When securing cover with cable, cord or other mounting device, make sure the cable, cord, etc. is positioned over the top of the Thru-the-Wall skimmer and **NOT UNDER THE SKIMMER**.

8. You may want to consider using cover clips to prevent wind from getting under the cover at the grommets and lifting the cover. These clips slip over the cover and the top rail.

9. Your cover should rest on the surface of the water. *See illustration on following page.*

Allow an accumulation of 1 to 2 inches of water on top of the cover to prevent it from flapping or dislodging during high winds. If ice forms on cover, do not tamper with ice or attempt to remove. Leave ice until it melts. Before removing cover in the spring be sure to siphon off **ALL** excess water resting on pool cover.

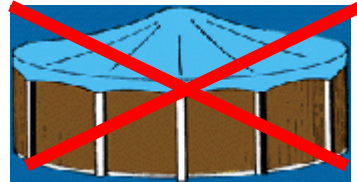
IMPORTANT: Monitor the pool throughout the winter and If you feel that the cable that attaches the cover to the pool is too tight and is pulling up on the pool ledges, or is creating excessive weight on the pool, release the cable to prevent damage to the pool.

RIGHT



The cover should lie on the surface of the pool water. Leave slack, do not pull tight.

WRONG



Do not install the cover this tight. The weight of snow or rain will force the cover at the seams and along the pool edges.

10. During the course of the winter you should regulate the amount of water that accumulates on the cover. **DO NOT** allow more than 2 or 3 inches of water to remain, as this will put undue stress on the cover and cables. Use a siphon or cover pump to remove excess water.



11. Now that the skimmer and return inlets have been sealed off you can disconnect the hoses at those fittings and store indoors. If your pool is plumbed with PVC pipe you need to completely drain the plumbing of water to prevent freeze damage.

12. Drain all equipment: pump, filter and heater, automatic chemical feeder, by removing the drain plugs and emptying all water (store drain plugs in pump basket). *Refer to the [filter operating instructions](#) and [pump instructions](#) found within this manual for more detailed winterizing instructions.* **WARNING:** Failure to properly drain your equipment may result in freeze damage that is NOT covered under warranty.



PLEASE NOTE: An improperly winterized pool can be severely damaged by ice. If you are unsure of any of the steps outlined above, please contact a Rhiel Supply representative. We will be happy to review these procedures and answer any questions you have about winterizing your pool. Rhiel Supply as well as the pool and equipment manufacturers assume no liability for improperly winterized pool/equipment. Please thoroughly review the complete operating manuals for each piece of equipment; located within this manual.



SWIMMING POOL SAFETY

Safety is the most important factor to consider when using or caring for your pool.

Please read all of the pages contained within this section, and make a habit of practicing basic safety in the use and care of your pool and equipment. Also, read your equipment owner's manuals carefully. When you see blue underlined text you can click to open up more information on that particular topic. In this section, we will discuss four main subgroups of safety:

[Chemical Safety](#)

[Water Safety](#)

[Electrical Safety](#)

[Equipment Safety](#)

The following **GENERAL SAFETY RECOMMENDATIONS** are supplied by the CPSC and the APSP and provide an overview of the various safety aspects mentioned above. Remember you do not know which pool safety step can save a life!

- Set pool rules and stick by them.
- Never dive in an above ground pool or shallow water.
- Nine out of ten diving injuries occur in six feet of water or less.
- Post depth markers to accurately identify the pool depth.
- Keep these basic safety items by the pool at all times:
 1. Shepherd's crook or long-handled hook
 2. Life ring preserver-coast guard approved
 3. First aid kit including written instructions on how to administer CPR
- Never leave children unattended or even out of eye contact in your swimming pool.
- Make sure pool is inaccessible to children when unsupervised or you are away from home.
- Don't leave toys around the pool or in the water. They could encourage an unsupervised child to enter the pool area.
- Follow instructions for assembly and use of a ladder.
 - Locate the ladder on a solid base
 - Face the ladder when climbing
 - Use the hand grips
 - One person on the ladder at a time
 - No running or pushing on the ladder
 - Swing-up ladders should be raised when leaving the pool unattended—even for a moment.
- Make sure you are aware of local requirements concerning fencing around pools.
- It is a good idea for all family members to become familiar with CPR (Cardio-Pulmonary Resuscitation). Training is normally available from a number of different groups, i.e., American Red Cross & YMCA.
- In case of emergency, call 911 immediately. It is a good idea to have a cordless phone available in the pool vicinity. Keep the following emergency phone numbers posted near the pool:
 - Police/Fire/Rescue
 - Poison control
 - Physician
 - Ambulance/Hospital
- Be aware and prepared for unsafe weather conditions. All swimmers should leave the water immediately as soon as you see or hear a storm to prevent possible electrical shock.
- Keep all chemicals sealed and out of children's reach. Always follow all directions on label.
- Never mix chemicals together.
- Always add chemicals to water, never the reverse.



[Water Safety Video](#)



- Chemicals should be stored in a cool, dry place.
- After handling chemicals, clean hands thoroughly.
- Never put a quick dissolving chlorine tablet or granular chlorine into an automatic chlorinator or floating dispenser.
- Pool alarms are recommended for families with small children or pets.
- Many serious pool accidents involve alcohol. Remember alcohol and pools don't mix!
- Glass and Sharp objects should not be used on or around the deck of the pool.
- All electrical equipment (including power supply cords) used with or around the swimming pool should be protected by a ground-fault circuit interrupter (GFI) at the power source. Your licensed electrical contractor always supplies this circuit. Serious injury and even death can result from improper electrical hook-up.

[CLICK ON AN IMAGE BELOW TO OPEN THE COMPLETE DOCUMENT](#)



Chemical Safety

When opening your pool or doing routine maintenance, remember to follow common-sense rules for safety. Using pool care products can be dangerous if you forget the right handling and storage procedures. Click here for more information on [Chemical Safety-Storage and Handling](#). All chemicals used for any purpose in or around the pool should be handled very carefully, stored in a safe place, and precautions noted. Chlorine and other pool sanitizers are classified as oxidizers. These chemicals require specific precautions, see [oxidizers](#). Some pool chemicals, specifically balancing chemicals, are classified as acids and also require specific handling and usage instructions, see [acids](#).

Water Safety

Pools are a great asset to any home or community, however, rules must be set and enforced, manuals must be read and re-read, and knowledge of proper water safety is key to avoiding preventable accidents. Every parent should teach his or her child(ren) to swim at an early age. You can contact one of the following organizations on-line to locate a certified water safety instructor in your area: www.ymca.net or www.swimamerica.org With a few precautions, the likelihood of a drowning incident may be significantly diminished. Please click below to view the following safety pamphlets related to drowning prevention: [Children aren't waterproof](#)

Layers Of Protection

Your pool provides your family the opportunity to enjoy healthy recreational activity together, as well as the means to teach your children a lifelong respect for water. As a responsible adult, you are aware of the risk of a child drowning when around any body of water, including pools. While it is a fact that adult supervision is the primary solution to childhood drowning, it is also a fact that most of these accidents occur when there has been a lapse in that supervision. Studies have shown in the majority of cases it is during these short lapses in supervision that children have gained access to the pool are through:



- ✓ **Open or unlocked house doors or windows,**
- ✓ **Open, unlocked or broken fence gates.**

Several suggested alternatives or options have come forward to provide a layering effect between the house and the pool. These options are to be used only in conjunction with proper supervision. **In no instance**, are they to be used in place of supervision. In discussing pool safety alternatives, Association of Pool & Spa Professionals (APSP), believes that certain requirements should be met at an absolute minimum. These are as follows:

- All pools should be enclosed by a barrier.
- When the house is used as one side of the barrier, all windows should have a latching device and all doors should be self-closing and self-latching with the latch located at least 56" from the floor.
- All fence gates should be self-closing and self-latching and capable of being locked when the pool is not supervised.

The suggested recommendations are in logical progression from the house to the pool. The APSP recommends that you not rely on any one system, rather several together providing layers of protection. Please pay particular attention to any sliding glass doors which provide access to the pool. These doors may often be left open, requiring layers of safety.

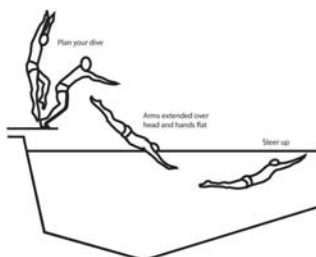
Diving

Under NO CIRCUMSTANCES should diving or jumping occur in an above ground pool!



In an inground pool the pool area must be examined (depth & obstacles) and a diving technique should be discussed to ensure a safe and fun dive. To learn more please visit the www.divingboardsafety.net website or click below to watch the safe diving video and to review the APSP safe diving instructions.

[Click here for Safe Diving Tips](#)



[Click to watch Safe Diving Video](#)



Entrapment

Entrapment occurs when a swimmers' hair or body parts are sucked into or held down by a strong vacuum through a suction fitting or main drain. Be certain that all swimmers know to **STAY AWAY FROM** the main drain and suction fittings, especially in spas and shallow pools. Regularly inspect the skimmer lids, and main drain covers to be sure they are securely screwed in place without sign of cracking or deterioration. If a broken or missing grate or drain cover is detected, the pool should not be used until the hazard is fixed. It is a good idea to have an emergency shut-off switch for the pool pump in an easily accessible area near the pool. Anyone using the pool should know where it is and how to use it in the event of an emergency.

[Click here to learn more](#)

Electrical Safety

GFCI - All electrical equipment (including power supply cords) used with or around the swimming pool should be protected by a ground-fault circuit interrupter (GFI) to protect from possible shock. Your licensed electrical contractor always supplies this circuit. Serious injury and even death can result from improper electrical hook-up. The GFI is located in either the junction box that connects the pool light to the electrical system or in the main load center for the pool (breaker box). The GFI consists of a reset button and a small square button marked "test". To test the effectiveness of the GFI first press the "test" button, it should trip. Next, depress the "reset" button. You should hear a clicking sound. This tells you that the shock protection is intact. Perform this test once a month to be sure your GFI is in working order.

Codes- All electrical equipment and wiring must meet the requirements of the local and national codes which apply.

Grounding and Bonding- All electrical equipment must be grounded. All metal objects (ladders, diving platforms, etc.) must be electrically bonded together.

Extension cords- Never use extension cords around a pool or spa. If they get wet, it's an invitation to a shock - possibly a fatal one.

For additional information read the document [Don't Swim With Shocks-click here](#)

Equipment Safety

Always read the complete owner's manual for all equipment and be certain you have a good understanding of its operation prior to start-up. Compressed air can become trapped within your pump and filter system creating a dangerous amount of pressure- enough to actually blow the lids off of filters or strainers. The manufacturer's owner's manual for your filter system and pump will explain how to safely bleed the air out of your system. **NEVER** start your system without opening the air bleeder valves first. Below is a safety checklist you should routinely perform to be sure your pool and equipment are operating safely and efficiently.

- Main Drain cover is installed correctly, screwed down, unbroken, and certified for that application.
- All skimmer covers are in place, screw-fastened and unbroken.
- Filter pressure gauge is in good working condition and that the filter pressure is within the operating range specified in your filter owner's manual.
- Filter o-rings are sealing properly and in good condition.
- Filter Tank Clamps and Bolts in place, in good physical condition, and correctly tightened. (Don't try to adjust clamps while the filter is under pressure.)
- ALWAYS Bleed off accumulated air from the system.

Avoid Drain Entrapments

Hair entanglement: hair can get caught in a faulty or broken drain cover

Limbs: arms, legs and fingers can become lodged in a suction opening

Body: any body part that can cover a drain can be held down by suction

Evisceration: sitting on a broken or uncovered drain can cause injuries or disembowelment

Mechanical: jewelry or bathing suits can become entangled in a drain cover

A pool or spa with a broken, loose or missing drain cover should be closed immediately until repairs are made by a licensed professional. If you see a broken or loose drain cover, immediately notify a lifeguard and the pool/spa manager. Ensure all pools and spas used by your family have compliant drain covers and other anti-entrapment safety devices, as needed.

- Skimmer baskets and the pump strainer basket empty and free of debris.
- Remove any debris or obstructions from the main drain cover.
- Remove obstructions and combustibles from around the pump motor air vents.
- All chemicals are properly stored ([see chemical safety storage and handling](#)).
- Pool heater is functioning properly, with no smell of gas around the heater.
- Make sure that all grounding and bonding wires are connected and in good condition.
- Make sure that all wiring connections are tight and clean and that all wiring and electrical equipment are in good condition.
- If equipment is indoors the area should be clear of leaves, debris, and combustibles.

The topic of safety cannot be stressed enough. Adult supervision (knowledgeable swimmer and CPR certified) around the pool is highly recommended. It is also wise to use multiple safeguards or Layers of Protection, mentioned below. As a pool owner it is your responsibility to make your pool environment as safe as possible.

Warning signs or notices supplied by your pool dealer must be applied or posted where they are visible to pool users. Please visit www.poolsafely.gov to learn more about water safety.

Please ask the adults and children that will be using your pool to take a brief water safety quiz- it only take a few minutes- click below.

[ADULTS water safety quiz](#)

[KIDS water safety quiz](#)



Kids can learn more about water safety by clicking on the picture of the pool above and playing an interactive water safety game on-line at www.poolsafely.gov or by playing an online video game by clicking on the Adventures of Splish and Splash image below

THE ADVENTURES OF SPLISH AND SPLASH



GAME 1
SAFETY AT A
HOME POOL



GAME 2
SAFETY AT THE
PUBLIC POOL



GAME 3
SPLASH LEARNS
HOW TO SWIM

Welcome to "The Adventures of Splish & Splash!" These child-friendly, interactive games were created to help families teach children about pool and spa safety.

You will meet Splish, a smart, sensible, adult-like character who knows about pool and spa safety, and Splash, an impulsive childlike character, who learns about safety through choices and consequences

Our objective is to show children that going to pools and spas requires

- The permission and accompaniment of parents or caregivers;
- The need to practice safe behavior and obey parents, caregivers and lifeguards and to pay attention to rules.

The videos are not meant to teach swimming but to show that it can be done with careful practice under the attentive watch of a parent or caregiver.

GLOSSARY

Acid- Chemical which lowers pH.

Acidic- Having a pH below 7.0. Opposite of basic.

Aggressive Water- Water that is corrosive because it is low in pH and/or calcium hardness and/or total alkalinity.

Algae- Microscopic plants that enter your pool via rain, wind, dust, etc. and can cause discoloration of the water or pool surface.

Algaecide- Chemical that kills or prevents algae.

Alkaline- Having a pH above 7.0.

Alkalinity- All pool chemicals work most effectively when alkalinity remains in balance. Alkalinity prevents pH bounce. Low alkalinity is very corrosive to the filter and other pool equipment. High alkalinity promotes scale formation, cloudy water and reduces chlorine efficiency.

Alum (aluminum sulfates)- A compound used to cause suspended solids in water to form filterable masses (floculant).

Ammonia- A chemical compound of hydrogen and nitrogen that combines with free chlorine in pools to form chloramines, or combined chlorine. Also combines with free bromine to form bromamines.

Backwash- The process of cleansing the filter medium and/or elements by the reverse flow of water through the filter.

Bacteria- Microscopic organisms that enter your pool from swimmers and dust, among other things, can cause irritation and infection.

Balanced water- Total water chemistry that is right where it should be to prevent both corrosion and scaling. The factors to check for in balancing your water are pH, total alkalinity and water hardness.

Ball Valve- A device that can partially or totally obstruct the flow of water, using a ball-shaped diverter.

Base- A chemical used to raise the pH and/or total alkalinity of pool water.

Basic- Having a pH above 7.0. Opposite of acidic.

Breakpoint Chlorination- The practice of adding a sufficient amount of chlorine to water to destroy the combined inorganic chlorine present. Normally, the amount added is 10 times the combined chlorine concentration.

Biguanide- polyhexamethylene biguanide (PHMB), is a chlorine-free organic biocide. SoftSwim is a biguanide. This polymer based pool and spa sanitizer uses a 3 step program to disinfect your pool.

Buffer- Any chemical that, when dissolved in water, will resist pH change. Also any chemical solution used to calibrate pH instruments.

Calcification- Formation of calcium carbonate on walls of pools or pipes, or in a filter or heater, due to precipitation of calcium carbonate.

Cavitation- The formation of partial vacuums when pump capacity exceeds the water replacement supply.

Channelization- The undesirable process whereby filter sand is permeated by tubes or channels of calcified or oily material, allowing water to pass freely, without filtration.

Chelating Agent- and sequestering agents are used to prevent mineral/metal precipitation (fall-out) by bonding minerals or metals in solution in the water to prevent staining, scaling or water discoloration.

Chloramine- A compound formed when chlorine combines with nitrogen or ammonia. It causes eye and skin irritation and has a strong, unpleasant chlorine odor.

Chlorinator- A device used to add or deliver a chlorine disinfectant at a controllable rate. Chlorinators are designed for specific chlorine compounds and should only be used with the compounds for which they are designed.

Chlorine- A chemical element that exists as a gas in its elemental form, or as a part of a chemical compound. Used as an oxidant to sanitize and disinfect pool water.

Chlorine Demand- The amount of free available chlorine combines with nitrogen or other organic compounds.

Circulation System- A system of mechanical equipment and/or components designed to ensure even distribution of heat, chemicals, and filtration of water throughout a pool. Includes filters, heaters, pumps, piping, inlets, drains, skimmers, and other devices.

Clarifier- A chemical that coagulates suspended particles in water. See coagulant or flocculant.

Coagulant- A chemical, usually alum, used in pools to gather and precipitate suspended matter.

Coping- The cap on the wall that provides a finishing edge around a pool. Can be formed, cast in place, precast or prefabricated from metal or plastic materials, brick or stone. May be used as part of the system that secures a vinyl liner to the top of the pool wall.

Corrosion- Eating away of metal surfaces in your system caused by water that's out of balance.

Cove- The radius that joins the floor and wall of a pool.

Cyanuric acid (Stabilizer)- Maintaining an appropriate cyanuric acid level protects free chlorine from the sun's UV (Ultra Violet) rays by slowing the breakdown of chlorine by the sun. The ideal range is 30-50 ppm. If the test value is beyond 90 ppm, you may have to drain a portion of the pool's water and replace it with fresh water to reduce the cyanuric acid level. This test should be performed at the beginning of each pool season by Rhiel Supply.

Stabilized chlorine (di-chlor and tri-chlor) are chlorines mixed with isocyanurates (stabilizer) and will increase the cyanuric level over time.

Etching- Corrosion on the surface; the pitting or eating away of a material such as the surface of plaster (marcite).

Filter Agitation- Mechanical or manual movement to dislodge the filter aid and dirt from the filter element.

Filter Aid- A powder-like substance such as diatomaceous earth or volcanic ash used to coat the filter media and trap a finer particle.

Filter Cycle- The operating time between cleaning or backwash cycles.

Filter Medium- A finely graded material (such as sand, diatomaceous earth, polyester fabric, anthracite, etc.) that removes solid particles from water.

Filter Sand- A hard, silica-like substance free of carbonates or other foreign material used as the medium in sand filters.

Filtration- The process of capturing suspended particles and clarifying water.

Flocculant (floc)- A chemical substance (Alum) or compound that promotes the combination, agglomeration or coagulation of suspended particles in water.

Free Chlorine- A measurement of the available disinfectant (hypochlorous acid) remaining in the water to kill bacteria, algae and other contaminants found in the water.

Hardness/Calcium Hardness/Water Hardness- A measure of the amount of calcium and magnesium in your water.

Hydrogen Peroxide- A compound of hydrogen and oxygen used as an oxidizer to shock pools treated with a biguanide program.

Hypochlorous Acid (HOCl)- The active form that kills algae and bacteria in your pool. The most powerful disinfecting form of chlorine in water.

Mineral Sanitizer (Frog or Nature²) – Consist of a housing that holds a mineral cartridge or reservoir. Pool water passes through the mineral filled cartridge and the water erodes the cartridge releasing various metallic ions that kill bacteria and algae. By treating the bacteria and algae, the sanitizer's job is greatly reduced, allowing you to use up to 50% less chlorine.

Organic Matter- In a pool, material introduced to the water by users and the environment such as perspiration, urine, saliva, suntan oil, cosmetics, lotions, dead skin, and similar debris.

Organism- Plant or animal life. Usually refers to algae or bacteria-like growth in pool water.

OTO (Orthotolidine)- A colorless reagent used in liquid test kits. OTO reacts with chlorine or bromine to produce a series of yellow to orange colors, indicating the amount of chlorine or bromine in water. Effectively measures Total Chlorine NOT Free Chlorine

Oxidizer- A disinfectant that works to eliminate irritating organic compounds from pool water.

pH- A measure of acidity and alkalinity of pool water. If the pH level is high (alkaline), it will cause eye and skin irritation, cloudy water and scale formation. Chlorine and filter efficiency will decrease. If pH is too low (acidic), it will cause eye and skin irritation, a breakdown of total alkalinity, and corrosion of metal. Acceptable levels are 7.2-7.8, with an ideal reading of 7.6.

PPB- Part per billion, the measure of a chemical's concentration in your water (this measure is usually used when testing for phosphates).

PPM- Part per million, the measure of a chemical's concentration in your water.

Precipitate- A solid material that is forced out of a solution by some chemical reaction and settles out or remains as a haze in suspension (turbidity).

Priming- Refers to evacuating the air; in a pump strainer housing you can manually prime the pump by filling with water and quickly replacing the lid.

Salinity- The sodium chloride or salt content of water.

Scale- White, gray or brownish spots on surface or equipment caused by water that's out of balance.

Sequestering Agent- and sequestering agents are used to prevent mineral/metal precipitation (fall-out) by bonding minerals or metals in solution in the water to prevent staining, scaling or water discoloration.

Shock Treatment- The practice of adding significant amounts of an oxidizing chemical to water to destroy ammonia and nitrogenous and organic contaminants.

Stabilized Chlorinating Products- A chlorinating compound that contains cyanuric acid protecting the chlorine residual against the negative effects of the sun. Lasts up to 5 times longer than unstabilized chlorinating compounds.

Superchlorination or Shock- The practice of periodically adding an oxidizer to destroy chloramines and other undesirable compounds that builds in your pool water. Free Chlorine levels need to reach 10 ppm or higher for a minimum of 4 hours for a shock treatment to be effective. You should routinely shock your pool every 1-2 weeks with an increase in frequency during heavy bather loads, high heat or heavy rain. If water problems such as cloudy water or algae appear you will want to shock the water.

Total Alkalinity- The ability or capacity of water to resist change in pH, also known as the buffering capacity. Measured with a test kit and expressed as ppm.

Total Chlorine- The measurement of your water is a combination of chlorine in the form of chloramines (already used chlorine) and free available chlorine (unused chlorine).

Total Dissolved Solids (TDS)- A measure of the total amount of dissolved matter in water, e.g., calcium, magnesium, carbonates, bicarbonates, metallic compounds, etc.

Turbidity- A cloudy condition of water due to the presence of extremely fine particles in suspension that interfere with the passage of light.

Winterizing- The process of preparing a pool for freezing weather. Includes chemical treatment of the standing water, plus physical and chemical protection against freezing of the pool and its equipment.

CONTACTS & COPYRIGHTS

We hope that you have found your Rhiel Supply interactive SPARCO pool manual to be an informative and useful tool as you learn about the care and maintenance of your swimming pool. We encourage you to reference this program often to find answers and advice for all of your pool care needs. Remember, if at anytime you have unanswered questions, the staff at Rhiel is only a phone call or short drive away. Our sales and service personnel are among the most experienced in the industry and are always ready to help. Please stop by one of our stores often to see what's new and exciting for your backyard or visit us online anytime

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