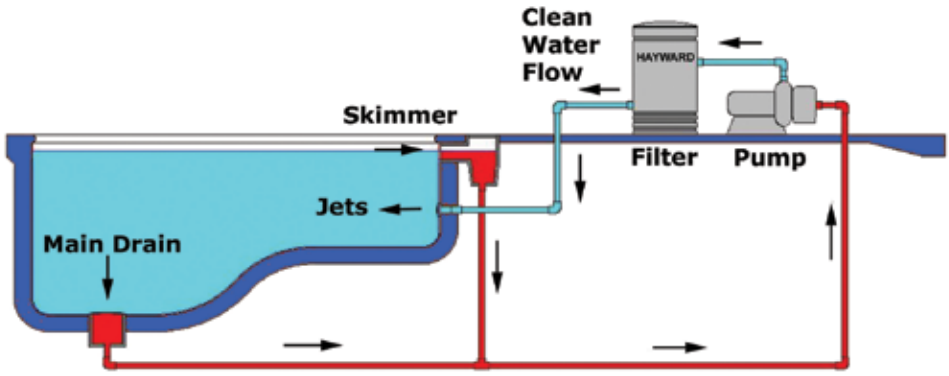
How your pool works

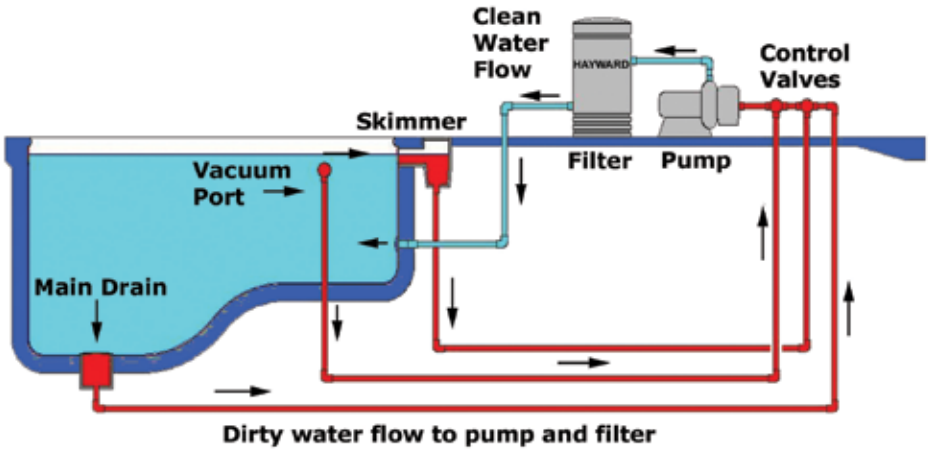
A standard pool filtration system is very simple: Suction is created from the pump motor when turned on. This draws dirty water from the main drain at the bottom of the pool and the skimmer port, which is the square hole near the top of your pool.

The dirty water is pulled through underground pipes to the pump, into the filter, and the clean water is then redistributed into the pool, typically through water ports (jets) in the walls of the pool. A timer turns the pump on for a specified amount of time every day (an hour for every ten degree of water temperature) and continually circulates the water during this period. In order for the filtration system to work at maximum efficiency, it is important that the filter is clean, free of dirt and debris, and cleaned at least once a month.

Two of the most common filtration systems are:



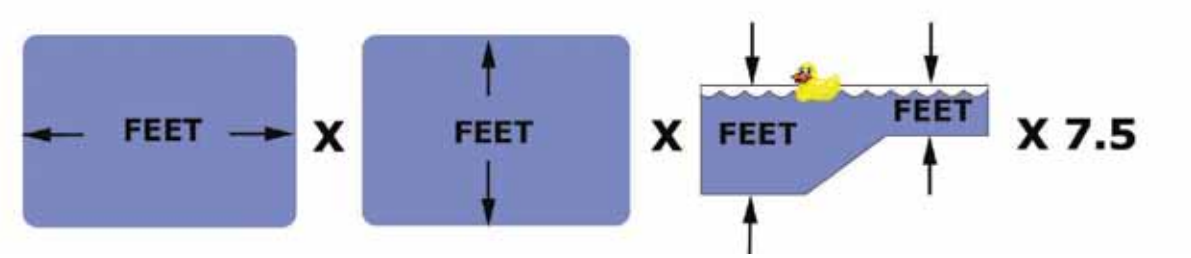
Single Line Suction System has a pipe that runs from the skimmer, connects with the main drain pipe, goes directly into the pump and filter, and then back into the pool.



Multi-port Suction System has individual pipes running from the main drain and skimmer. These interconnect just before they reach the pump and typically have a valve that can be adjusted. This valve allows you to manipulate the force of suction from the skimmer or main drain. Some pools have a side port with an individual valve adjustment, which an automated floor vacuum can be attached. The side port pipe that leads to the pump is separate from the main drain and skimmer pipes.

Determining the size of your pool and volume of water

An average pool size is 15 x 30 feet in diameter, 3 - 4 feet deep in the shallow end, and 9 - 15 feet deep in the deep end. The average volume of water in a pool this size is around 10,000 - 15,000 gallons.



The following formula will determine the size of your pool and volume of water. This is crucial information when you go to your pool store as it gives the store employees insight on how much chlorine and pool acid you may have to add every week. Whether your pool is rectangle shaped, kidney shaped, or another design, simply put, the larger the pool, the more chemicals you will have to use.

Once you determine the size of your pool and volume of water, write it in the chart on the next page.

Calculating water volume for a rectangle or square shaped pool

This process is simple and is a combination of length x width x depth x 7.5 to equal the total pool water volume. We'll do it in the spaces below.

1) With a tape measure, or, using approximate footage, measure the length and width of your pool.

Total length _____ Total width _____

2) Approximate the depth of the shallow end and deep end of your pool.

Depth (shallow end) _____ (deep end) _____

Add together _____ and divide by 2, = _____ total depth

Now, write it all down here:

3) Total length _____ x total width _____ x total depth = _____

Add together:

4) Total _____ x 7.5 = _____ U.S. Gallons.

Write total gallons on chart on next page.

Example

Depth (shallow end) 4' (deep end) 10'

Add together 14' and divide by 2 = 7' total depth

Total depth: 7' x total length: 30' x total width: 15' x 7.5 =1,350'

Chemistry Made Easy

OK, I'll be the first to admit that I'm not into chemistry! I do however admire people who understand it; and I love having conversations with them because they have a passion about chemistry that has always impressed me.

While servicing pools, my eyes have opened about some aspects of chemistry, but the fact remains, it's not something that inspires me. As I was preparing to write this chapter, I did extensive research using pool related books, magazines and manuals. I also talked extensively with industry professionals. After all was said and done, I came away a bit confused and decided that as I write this chapter, I will keep it simple and easy to understand.

My belief is that when the average pool owner begins to read overly complicated manuals, they only get confused, frustrated and then lose interest in servicing their pool. My goal in this book is to keep it simple in order for you to be inspired by other unique chapters in this book.

NOTE: As I was in the finishing stages of this book, I discovered a website which had simplistic and easy to understand perspectives on pool chemistry. I contacted the former owner, Timothy Mott (he and his wife are now missionaries in Nicaragua), for permission to incorporate his text with mine. Mr. Mott, and the new owners, were gracious to accommodate me. They also sell a variety of pool related equipment and supplies. Please visit their website: www.poolplaza.com

Testing your pool water

There are four ways to test the water in your pool:

Testing Kits

1. DPD Testing Kit can be bought at any pool store and use liquid reagent solutions in small bottles that come with it. They are very easy to use and involve nothing more than counting drops or comparing colors. Taylor Technologies (see page 37) makes one of the most popular kits on the market and I use their products extensively. The reality is, if you want to do it right, plan on spending around $50.00 for a professional kit. Beware of inexpensive kits not made in this country as they are far from reliable.

2. OTO Testing Kit contains the same tests as the DPD kit except chlorine is measured by an older style of chemistry that turns yellow instead of the pink created with DPD. For numerous reasons, I believe the DPD system is a more reliable method as it measures the amount of active chlorine that's available to kill germs. OTO cannot differentiate between active and spent sanitizer (chlorine). This book will feature only DPD Testing Kits.

IMPORTANT: You should always handle and store reagent solutions with care. Be sure to use the stopper that seals the testing container when it is shaken (but not stirred). WHAT NOT TO DO: Some people drop reagents directly into the pool and judge the quantity of chlorine to add by the flash of color seen in the water. This is not accurate by any means.

3. Test Strips

This is an easy way to test your pool water simply by dipping a small strip of plastic with colored squares into your water and measuring the colors against a chart on the bottle the strips come in. The disadvantage of test strips is that the more they are exposed to air, humidity and heat, the less accurate the reading. The solution is to use high quality test strips and store them inside at room temperature. If you remove a strip from the bottle, reseal it quickly.

4. Electronic Reading - Advanced Photometers

To me, this is one of the best, and most accurate ways to read your water levels. Simply by putting a small amount of water into a hand held battery operated device, you get an exact reading at the touch of a button. As it is waterproof, you don't have to worry about dropping it into the pool.

NOTE II: In my research, I have discovered an American company, Industrial Test Systems, that manufacturer's high quality test strips and advanced photometers. I have done extensive research and comparison tests using these products with consistent success. Consequently, I will use them as a reference throughout this chapter.

Danger Will Robinson!

ADDING CHEMICALS TO YOUR POOL

Never mix chemicals, whether liquid, granular or powder, in containers, or in the pool water. Be sure to read all warning labels on chemical containers and educate yourself and your children to the dangers of pool chemicals. When adding chemicals into your pool, make sure the pump is running so the chemicals circulate properly.

Adding pool chemicals into your pool in any combination, other than one at a time, is nothing short of dangerous! Chlorine and pool acid should be added into different areas of the pool because harmful vapors arise if they are poured in the same area of water. Never pour liquid chemicals into your skimmer as it could damage your pump system and pipes.

Chemicals should be stored in sealed containers and kept a safe distance from other chemicals. Use a new container to store chemicals. If you use an empty bucket that once contained pool chemicals, the chemical you put into it could mix with remnants of other chemicals and cause toxic fumes, or worse. Be sure all containers are properly labeled and written in large letters with a black marker.

DANGER: Chlorine in a small bucket mixed with pool acid or muriatic acid causes dangerous fumes that no one wants to be around, no matter how healthy they are.

IMPORTANT - Color graphs on upcoming pages are not exact representations of the proper test color. However, the numbers under the readings are acceptable levels within the industry. Once you determine proper levels by the numbers on your DPD test kit or test strip, write down test results on the maintenance chart on page 127 for better understanding of chemistry applications. NOTE: The testing levels for spas are considerably different than for pools. Consult with your spa specialist for proper levels.

Always Use Gloves And Face Mask When Handling Chemicals!

Always wear a face mask, goggles, gloves and protective clothing when adding chemicals to your pool. Keep a garden hose handy with running water to rinse any spillage on yourself or pool deck. If you spill any liquid chemicals on your deck, rinse it immediately. If you forget, someone could step into a puddle of chemicals thinking it is water and can chemically burn their feet.

When adding chlorine or pool acid into your pool, set the jugs on the edge of the pool, grasp handle firmly, and slowly pour into the pool. Avoid splashing the water as the chemicals could splash onto your face, skin, or clothing. Beware of the dangerous nature of chemicals you are handling. Do not mix chemicals with each other or in the same part of the pool. Wear safety gloves, goggles, mask and protective clothing. Beware of fumes. Some chemicals give off strong fumes that cause serious personal injury if inhaled in sufficient quantities.

11 Tips For Getting Accurate Results From Test Strips

1) Read the instructions before using; each manufacturer has unique instructions plus a manufacturer's may change over time
2) Keep strips dry before use - wet fingers can spoil a whole bottle of strips
3) Limit exposure to air and humidity by keeping the container closed when not in use
4) Don't touch the unreacted pads or put the pads in contact with anything else that might contaminate them
5) Expose pads to water exactly as directed - dipping, swirling, and swishing are different motions.
6) Don't flick off extra water unless so instructed
7) Let correct amount of time elapse for starting and completing the readings
8) Read test values in the order given
9) Prevent reagents running between pads by holding strip horizontal to the ground when comparing colors
10) Make color matches in natural light without sunglasses
11) Don't use strips past the expiration date

The Centers For Disease Control recommend people who use public pools and spas, like at the gym or a hotel when traveling, use test strips to test the water themselves before entering... just in case the operator has been negligent in keeping up with the sanitizer demand. For this reason, Taylor Technologies offers 10 test strips in a resealable foil pouch that fits into a pocket, purse, or gym bag (product #K-1305). For more information, visit: http://cdc.gov/healthyswimming/pdf/pool_user_tips.pdf - Courtesy of Taylor Technologies

About Chlorine

What Is The Purpose Of Chlorine?

Chlorine (also known as Sanitizer) is one of the most important chemicals as far as swimming pools are concerned. It works as a sanitizer or disinfectant in pool and spa water to kill bacteria and algae. By oxidizing ammonia and nitrogen compounds such as swimmer waste, it literally burns up organic material in the water and reduces the load on the filter. As a sanitizer, chlorine kills germs in fairly short order, usually milliseconds. Keep in mind that if germs are not killed quickly, then swimmers can become infected by an assortment of unpleasant micro-organisms.

How Much Chlorine Is Necessary?

It is important to maintain a chlorine residual in the pool water at all times. A chlorine residual is the chlorine that is in the water waiting to oxidize or sanitize the "bad stuff". Generally speaking, you need to keep it between 2.0 and 5.0 parts per million (ppm) of chlorine in the water. This requires that chlorine be added to the pool on a regular basis in order to maintain the proper level. By testing once a week, and adding chlorine when needed, in time you will establish a pattern on what works for you and how much to add. Be sure to use the maintenance chart on page 127 as a guide.

How Do I Maintain Proper Chlorine Levels?

To maintain proper chlorine levels, it is important to test your water regularly using a DPD test kit, electronic photometer, or reliable test strips. I encourage testing the water chemistry at least once per week, or more during times of heavy usage. Bring water samples to your pool store if you aren't sure how much chlorine to add. Be sure to have your pool water volume and size with you (page 8).

Chlorine Adjustments

It is extremely important to maintain a consistent level of chlorine in the pool. If the chlorine level is allowed to drop to zero, the pool will develop algae and swimmers will be at risk of infection. Once again, testing your pool once a week cannot be overemphasized.

Important Terms & information

Free Chlorine - The active form of chlorine available to kill bacteria and algae. This test tells you how much chlorine is working for you in your pool.

Combined Chlorine - Chlorine that has combined with ammonia, nitrogen or other organic compounds that are in the water.

Total Chlorine - The sum of the amount of free chlorine and combined chlorine. This is a reference test only and should not be used to judge how much chlorine to add to your pool.

Chlorine Demand - the amount of chlorine that is needed to burn up all the contaminants in the water. Typically, a heavily used pool will have a high chlorine demand and will use a lot of chlorine while a lightly used pool will have a low chlorine demand.

Factors that increase chlorine demand - Heavy usage • Sunny weather • Hot water • Low stabilizer level

Factors that reduce chlorine demand: - Low usage • Lack of sunlight • Cold water

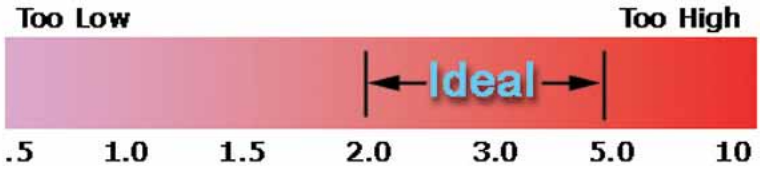
TESTING FREE CHLORINE

Properly estimating chlorine demand is very important because if you do not, your pool will either run too high or too low on chlorine. Make notes on the maintenance chart (page 127) and pay attention to how much chlorine you add over a one - two month period. By doing this, you should see a pattern that will help you judge future applications.

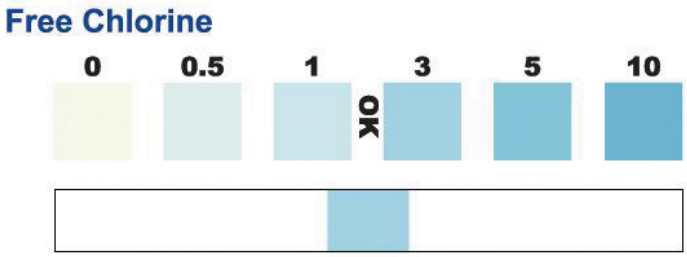
1. Fill the small TAYLOR test vial, to the 9 mL mark with pool water. Add five drops of R-0001.
2. Next, add five drops of R-0002, put cap on container, mix well, and compare the sample color with the printed colors on the test vial.
3. An acceptable reading in the industry (depending on the state) is between 2.0 ppm - 5.0 ppm.

eXact® EZ Photometer

2.0 - 5.0



DPD Liquid Reagent Test Reading



PoolCheck ™ Test Strip

High Readings If the test sample color is 5.0 ppm, dilute and re-test according to the instructions, or, take a water sample to a pool store for a more precise reading. If the drops of R-0002 turn red for a second when they hit the sample and then turn clear, your sample may be bleaching out due to extremely high levels of chlorine.

Low Readings - Hot, sunny days, lots of swimmers, or a heavy rainfall can reduce the level of chlorine. If the chlorine is too low, it is important to quickly raise the chlorine level to keep swimmers safe and prevent an algae bloom.

If algae develops, raise the chlorine level and brush pool to expose the algae. Discuss how much chlorine to add with a professional. By adding the proper amounts of chlorine, you shouldn't have to buy any chemical additives.

IMPORTANT: If you have to add a lot of chlorine to your pool, keep children and adults out of the water until the sanitizer (chlorine) drops to under 5.0 ppm and has balanced to an acceptable level.

pH Balance

pH is a measure of how acidic or basic the water is in the pool. The concept of pH balance can be confusing, but it is actually fairly simple:

NEUTRAL pH is very good for your pool and the industry standard is between 7.4 - 7.6. This is the most common target point for pool water. Your eyes have a pH of 7.5. If the pH is high, your eyes will sting. If the pH is low, you will experience dry eyes.

ACIDIC (7.2 or lower) means that the water is generally "under-saturated" or "hungry" and is seeking something to raise the pH level. Soda Ash is usually used to raise the pH level. Some pool companies use Sodium Bicarbonate (baking soda) to raise the pH but it will also raise the Total Alkalinity (TA) of the pool water.

Acidic water tends to corrode or etch metal and copper pipes and your pool's surface. If you get lower than 7.2, you risk a corrosive environment in the water. High pH levels can corrode the heating elements of a heat pump and screw up your system and pipes. Salt cells in a salt system can also be damaged. Consult with factory recommendations for ideal pH settings.

BASIC (7.8 or higher) is generally "over-saturated"; meaning that it wants to deposit some of its excess material. Pool Acid is used to lower this level and bring it into proper range

Basic water tends to deposit scale or, carbonates, on your pool's finish or tile. It can also cause cloudy water which is a sure sign something is terribly wrong.

Pool Acid and Sodium Bicarbonate can be purchased at your local pool store. There are two types of pool acid. I prefer the "Non-Fuming" brand (versus Muriatic Acid) as the fumes aren't as strong.

pH Adjustment Tips

1. When adjusting pH levels using pool acid or Sodium Bicarbonate, usually, you can see a difference in the test readings in under an hour. Make sure the pool pump is running to circulate the water.

2. If the pH is way off, don't add excessive amounts of pool acid or sodium Bicarbonate with hopes of balancing everything out quickly. If this is the case, add chemicals and wait 24 hours and adjust again. If you still have problems, take a water sample to your pool store and have them test it.

3. High chlorine levels can cause the pH test to come out wrong. If the free chlorine is high, wait until the chlorine/sanitizer level is normal, then retest.

4. Fiberglass pools typically have low pH readings and you may have to use more Sodium Bicarbonate to raise the pH. If this doesn't solve the problem, get advice from your pool store professional.

5. Do not add more than 1 gallon of pool acid per 10,000 gallons of water at one time. If the pool requires more than this, add the maximum amount then retest 12 hours later and make further adjustments. This will help to keep you from over-treating the pool.

• A good rule of thumb - Once your chemicals are properly balanced, for every 2.5 gallons of chlorine you add to your pool, add 1/4 - 1/3 gallon of pool acid in the deepest area of the pool next to a return jet.

TESTING pH

The pH test is fairly straightforward. It is based on a phenol red solution which turns different colors based on the pH of the water.

1. Fill the large TAYLOR test vial to the 44 mL mark with pool water.

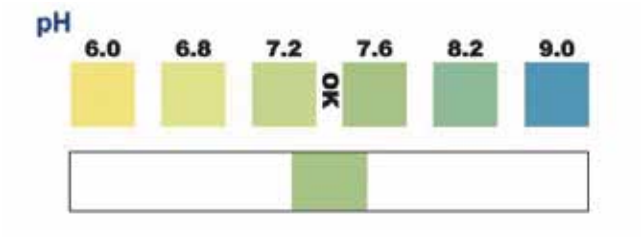
2. Add five drops of R-0004, put cap on container and mix well. Compare the sample color with the printed colors on the test vial.

3. An acceptable reading in the industry (depending on the state) is between 7.4 - 7.6.

eXact® EZ Photometer

7.2 - 7.6

Phenol Red Liquid Reagent Test Reading



PoolCheck ™ Test Strip

Adjusting pH levels

Adjusting the pH is something that should be done incrementally. It is better to make slight adjustments when the pH gets a little high or low during your weekly testing.

LOW pH (7.2 or lower) - Start by adding about one scoop of a pool measurement cup (app: 20 oz) of Sodium Bicarbonate into the skimmer, or, pour it around the edge of the pool in the deep end. Don't pour it all in one place or it will cloud up the water.

HIGH pH (7.8 or higher) - To lower the pH level, add one quart of Pool Acid at a time (one quarter of a gallon bottle) around the deep end of the pool. Check in about an hour and note the difference from your original reading. Keep adding Pool Acid in small increments until you reach the proper pH level. Because there are so many variables in pool sizes, I have found this to be the best method.. a little at a time until you get the hang of it. (Be sure to make notes on the chart on page 127)

Total Alkalinity (TA)

If the water in a pool becomes overly acidic (the pH gets too low), the water becomes "hungry" and attempts to balance itself. It can balance itself in one of two ways:

1. It can dissolve some of the plaster, and the metal parts in the pump, filter and heater.

2. It can dissolve some of the alkaline materials (total alkalinity) in the pool water. Obviously, this is the preferable way to go, because it is a lot easier to replace the alkaline materials in the pool water than it is to replace the pump, filter, heater, or plaster.

Ideal Alkalinity will buffer pH swings so they do not attack the plaster or cause the pH to fluctuate excessively. A good TA reading is between 80 and 120 and helps to protect the water against pH changes.

Low Alkalinity (under 80) will cause the pH to swing up and down fairly wildly and damage the pool or equipment over time.

High Alkalinity (over 120) may cause the water to cloud up because the water is oversaturated and there is only so much material that it can absorb

The use of Sodium Bicarbonate (baking soda) can be used to raise the TA level, while Pool Acid is used to lower TA. Once you establish a consistent chemical balance after weekly testing, your TA level should stay relatively constant.

NOTE: Do not add more than 1 gallon of Pool Acid per 10,000 gallons of water at one time. If the pool requires more than this, add the maximum amount then retest 12 hours later and make further adjustments. This will help to keep you from over-treating the pool.

TESTING ALKALINITY LEVELS

The Total Alkalinity test involves the use of three reagents for a proper reading.

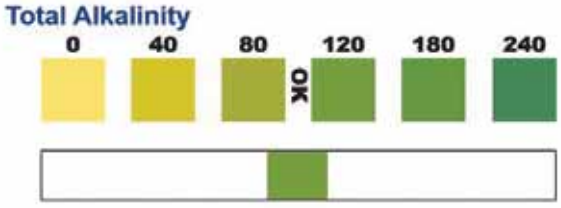
1. Fill the large TAYLOR test vial to the 25 ml mark with pool water and add 2 drops of R-0007 to neutralize the chlorine in the water. If your chlorine level is above 5 ppm, add one more drop in order to neutralize the chlorine.
2. Add 5 drops of R-0008 to the sample and swirl until you see a consistent green.
3. Add R-0009 drop by drop, swirl the water and count the drops until the sample turns from green to red. Multiply the number of drops by ten to get the total alkalinity reading. i.e: 10 drops = 100 ppm.
4. A good TA reading is between 80 and 120 and helps to protect the water against pH changes.

NOTE: If the chlorine level is high, the color may flash from blue to yellow instead of green to red. This can be solved by adding more neutralizer as described above, and then test again.

eXact® EZ Photometer

80 - 120
(Use Conversion Chart)

Liquid Reagent Test Reading



PoolCheck ™ Test Strip

Adjusting Total Alkalinity - pH and Total Alkalinity (TA) adjustments can affect each other. Always correct TA first, then pH.

Raising Low TA levels (under 80) - With pump on, add about one scoop of a pool measurement scoop (app. 20 oz) of Sodium Bicarbonate into the skimmer, or, pour it around the edge of the pool in the deep end. Don't pour it all in one place or it will cloud the water. Test in about an hour and add more if needed.

Lowering High TA levels (over 120) - Add one quart of Pool Acid at a time (one quarter of a gallon bottle) around the deep end of the pool and away from the return jets. This creates pockets of low pH, burns off alkaline materials, and brings down the TA without significantly lowering the pH. Check in about an hour and note the difference from your original reading. Keep adding pool acid in small increments until you reach the proper TA level.

Stabilizer (Cyanuric Acid)

Because chlorine is very unstable in the presence of sunlight, it dissipates very quickly, especially on a sunny day. Stabilizer is a chemical that is added to outdoor pools and keeps the chlorine from being used up quickly. If it is too low, your chlorine dissipates at a fast rate. If it is too high, the effectiveness of the chlorine is greatly reduced.

Stabilizer can be added by itself, or as part of chorine compounds called Trichlor Tablets, or Dichlor Granules.

IMPORTANT - A standard tab of stabalized chlorine, (trichlor) contains up to 5+% of stabilizer. If someone has convinced you that you can use trichlor tabs instead of chlorine, remember that each time you use a this tab, it raises your stabilizer level. NOTE: Cal Hypo tabs and do not contain stabilizer so be sure to discuss this product with the people at your pool store.

Any time you use triclor tabs, or, add dichlor stabilizer granules, you need to keep a close eye on your stabilizer levels. If the level exceeds 100 ppm, your chlorine becomes ineffective. Yellow algae and poor sanitization are among the problems you will encounter. You may have to dilute the water in your pool. If so, consult with a professional at your pool store.

Adding Stabilizer (Dichlor Granules)

1. Once you establish your stabilizer level on the next page, if the stabilizer is too low you will have to add the required amount to bring the level up. Typically, you will find the suggested dosage on the back of the container it comes in.

2. Make sure you clean your filter before adding stabilizer as the granules settle into the filter. If you clean the filter after adding stabilizer, you are literally washing your money away.

3. With pump running, remove skimmer lid and slowly pour the required amount of stabilizer granules into the pump system. ADD IN SMALL AMOUNTS! Do not put more than 1 pound of stabilizer* into the skimmer over the course of an hour as the particles could jam your pump basket. Wait 24 hours to read stabilizer level in water.

IMPORTANT! Be patient when adding stabilizer! If you put too much in at one time, you could have a “big ol’ mess” on your hands that jams the skimmer, or even worse... the plumbing system (don’t ask me how I know this).

* NOTE: Again, the above steps are dependent on pool size, so it may take some experimentation on your part. If you have a small pool, start with 1/2 lb of stabilizer or less.

• If, after testing your water and your readings makes no sense to you, have it re-tested by a professional. If you add too much stabilizer, you can’t remove it without diluting the water in the pool.

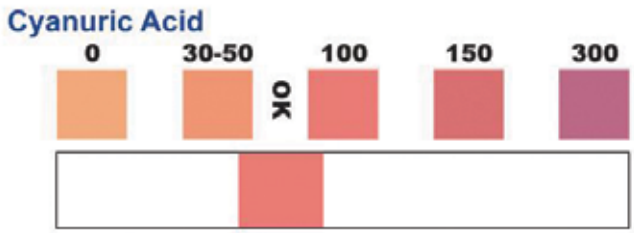
TESTING STABILIZER

1. Your TAYLOR test kit contains a small, clear, plastic dispensing bottle. Fill this bottle halfway to the 7 mL mark with pool water and an equal amount of reagent R-0013, then mix vigorously for 30 seconds.
2. On the left side of your comparator block (test vials) you will see numbers on the back of the small vial ranging from 30 -100 and a black dot at the bottom.
3. Dribble the reacted test sample into the test vial until the black dot at the bottom of the vial is no longer visible and then take the reading from the markings at the side of the vial. If the water comes up to the 60 marking, the level is 60 ppm (the more stabilizer that is in the water, the cloudier the test sample will become).
4. A proper test level is 30 - 50 ppm. By 80 ppm, you run the risk of having too much stabilizer in your pool; inhibiting the sanitizing ability of the chlorine in the pool. Do not use any more trichlor tabs if you reach this level.

eXact® EZ Photometer

40 - 60

Liquid Reagent Test Reading



Calcium Hardness

Calcium hardness is a measure of the dissolved calcium in water. The calcium hardness level should be maintained at a minimum of 200 ppm. If it exceeds 500 ppm, then the pool water may need to be diluted. Normally, except in the western U.S., calcium hardness levels do not get too high unless the pool is using large amounts of calcium-based chemicals like Cal Hypo chlorine granules or tablets.

There are a couple of problems that can result from having improper calcium hardness levels: 1. If the calcium hardness is too low, then the calcium starved water may leach calcium out of the plaster, causing pitting. 2. If the calcium hardness is too high, then cloudiness or scaling (crusty deposits) may result. Typically, the majority of scaling problems occur right after the pool is re-plastered and is the result of plaster dust that adheres to the surface.

TESTING CALCIUM HARDNESS

Because calcium problems appear under extreme conditions, take a water sample into your pool store every four weeks for a test. If they discover problems, research solutions or bring in a professional to asses the situation. The fact is, there are too many variables and if you take bad advice or do something wrong, you can take a bad situation and make it worse!

The Calcium hardness test involves the use of three reagents for a proper reading.

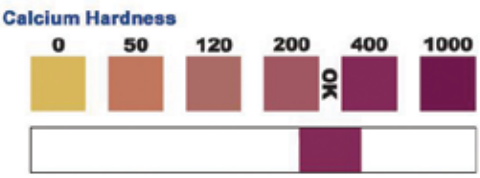
1. Fill the large TAYLOR test vial to the 25 mL mark with pool water and add 20 drops of R-0010.
2. Add 5 drops of R-0011L to the sample and swirl until you see a light red.
3. Add R-0012 drop by drop, swirl the water and count the drops until the sample turns from red to blue. Multiply the number of drops by ten to get the calcium hardness reading. i.e: 30 drops = 300 ppm (disregard any pink “floaters” caused by magnesium hardness in the water).
4. A good Calcium hardness reading is between 200 and 500. If the calcium level is above 500 consult with your local pool professional.

eXact® EZ Photometer

200 - 500

(Use Conversion Chart)

Liquid Reagent Test Reading



PoolCheck ™ Test Strip