

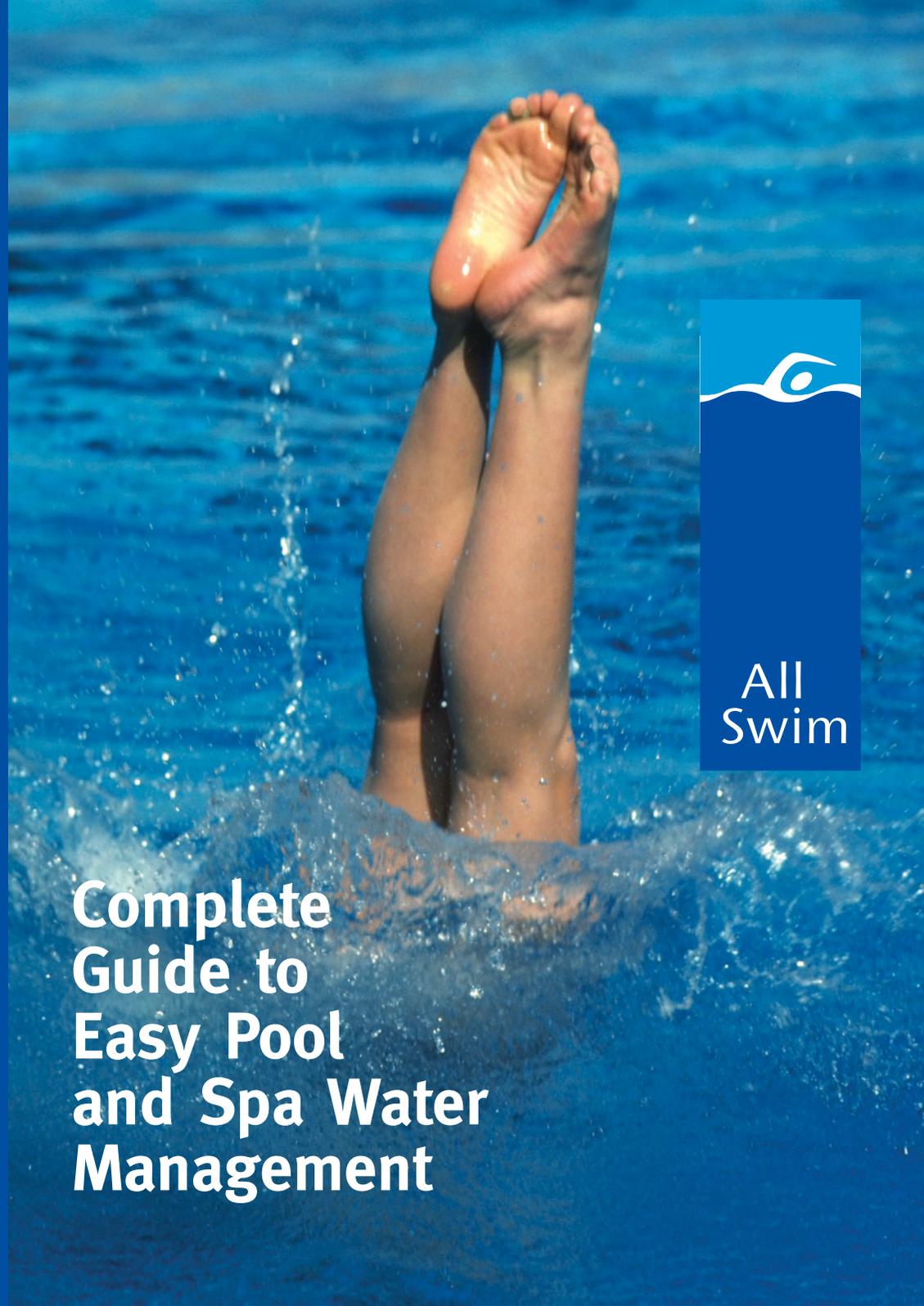


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Complete Guide to Easy Pool and Spa Water Management



Complete Guide to Easy Pool and Spa Water Management

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All technical information in this guide is correct at time of print.



Welcome to All Swim's complete guide to swimming pool and spa water management. The aim of this guide is to explain step by step, the principles of maintaining safe high quality water with the minimum amount of expense and effort. A swimming pool or spa is a source of fun, relaxation and exercise but it must be remembered that ongoing maintenance is essential to ensure safe water for bathers. Both swimming pool and spa water is being constantly recirculated and reused – dirt, bacteria and other impurities are constantly being added to the system and they need to be removed in order that they are not harmful to health.

This guide has been produced to help achieve safe well balanced water in both swimming pools and spas, however, if at any time you are unsure about the technical aspects of water treatment don't hesitate to contact us on 0800 0268415, alternatively, if you would like a sample of your water analysed All Swim offers a free computerised analysis service for all its customers.

Note: The recommendations in this guide are for domestic swimming pools and spas only.

Safety

When owning a swimming pool or spa, safety is of great importance and a few points to remember are:

General Pool Safety

- No running around the pool
- Adult supervision is always required
- No diving except in the deep end of a pool and only when there is a suitable depth of water (current recommendations 2.4m)
- Identify the start of the deep end and its depth
- Keep glass away from poolside
- Make available floating Lifebuoys

Chemical Safety

- Read Instructions on each product thoroughly before use
- Never mix different chemicals, including cleaning products, weed-killers and chlorine products as a dangerous reaction may occur
- When pre-dissolving chemicals always add chemicals to water and never vice-versa
- Always pre-dissolve chemicals in a clean plastic container
- Always handle chemicals in a well-ventilated area, preferably outdoors
- Never use unlabelled chemicals
- Store chemicals in a secure, dry and cool place
- Keep chemicals away from children and animals
- Avoid spillage
- In the event of a spillage, clean up using clean receptacles and dispose of in the pool. Flush area thoroughly with large volume of fresh water
- Before disposing of empty containers, rinse them thoroughly in the pool
- Always wash hands after handling pool chemicals

4 Pool and Spa Water Basics

Pool and Spa Water Basics

Before you can begin analysing and treating your water you need to know how much water there is to be treated. If you have a spa this information is normally supplied in the handbook, if you have a swimming pool, the gallonage is calculated as follows:-

Square and Rectangular Pools

Length (in feet) x width (in feet) x average depth (in feet) x 6.25

Circular Pools

Radius (in feet) x radius (in feet) x depth (in feet) x 19.625

Irregular Shaped Pools

Take an approximate rectangular shape through the main curves of the pool and then use the square and rectangular pool calculation.

If you are unsure about any of the calculations, don't hesitate to contact us.

Useful Conversions

Inches x 2.540 = Centimetres

Feet x 0.3048 = Metres

Square Feet x 0.0929 = Square Metres

Imperial Gallons x 4.5461 = Litres

Kg x 2.205 = Pounds

Testing the Water

Once you have calculated the quantity of water to be treated you need to test the water; testing the water is not difficult but you do need to check for a **minimum** of three factors – Chlorine, pH and the overall water balance. These tests can be carried out by using one of the following methods:-

The most common method of testing is via the comparison method, with either a test kit or test strips being used. With the test kit a small vial is filled with water and a tablet or reagent dissolved, any colour change is then compared to the colour chart supplied. Alternatively, test strips are used which are simply dipped into the water and then compared to the colour chart – this method is becoming increasingly popular.

It is most important when testing water you have a good quality test kit that is replaced regularly as an old faded test kit will give the pool or spa owner incorrect readings.

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Sanitising

Although your water may look crystal clear, if left untreated it will become a breeding ground for bacteria and algae. This algae can also quickly turn pool surfaces green and in order to prevent this, a programme of sanitisation/disinfection is undertaken. This is the process of killing or removing as many of the micro-organisms as possible.

The most common types of sanitiser are Chlorine for pools and Bromine for spas.

Chlorine

For safe healthy water chlorine needs to be added until it is present as free chlorine – this is achieved when all the impurities are broken down and further chlorine has been added. Ideally for a private pool a free chlorine level of between 1 - 1.5ppm (parts per million) is required.

There are different products available to achieve the free chlorine level required and the product chosen is mainly down to personal choice. A selection of the products available are:-

All Swim Cyanachlor

Stabilised chlorine granules (Sodium Dichloroisocyanurate) 55% available chlorine.

All Swim Shock Granules / All Swim Quick Dissolve Shock

Unstabilised chlorine granules (65% available Calcium Hypochlorite).

HTH

Unstabilised chlorine granules (65% available Calcium Hypochlorite).

All Swim Chlorine Tablets

Stabilised chlorine in tablet form (Trichloroisocyanuric acid).

All Swim Multi Pool Tablets

Stabilised chlorine in tablet form with added clarifier and algicide (Trichloroisocyanuric acid and aluminium sulphate).

Sodium Hypochlorite

Unstabilised chlorine liquid with 14/15% strength.

All Swim Cyanachlor

For routine treatment in an outdoor swimming pool, All Swim would recommend the use of All Swim Cyanachlor as it already has a stabiliser built into it – this stabiliser helps reduce the amount of chlorine that is broken down by sunlight.

Cyanachlor also has the advantage that it is completely soluble and requires little if any pH balance. It must be remembered, however, that Cyanachlor cannot be used to shock treat a pool as in the event of it turning green the stabiliser causes a slower release of chlorine that is not sufficient to kill the algae.

6 Pool and Spa Water Basics

All Swim Shock Granules/HTH

If unstabilised shock granules are preferred for day to day running it is recommended that stabiliser (All Swim Conditioner) is also used, so the life of the chlorine is prolonged. Unstabilised shock chlorine does, however, have the advantage that it raises sanitiser levels quicker than other products and as such is ideal for treating green pools.

Note: When stabilising your pool with conditioner (Cyanuric Acid), you need to ensure the cyanuric acid level does not exceed 100ppm as at this point chlorine lock can occur and very little chlorine is released into the pool water. If you are unsure about your cyanuric acid level All Swim can check this for you Free Of Charge with our computerised water analysis programme.

All Swim Quick Dissolve Granular Shock

This product has the advantage over conventional shock treatment in that its rapid dissolve micro crystals mean that it can be sprinkled directly onto your pool water, eliminating the need for predissolving. (Note: pool water temperature must be above 22°C, otherwise predissolving is still required).

All Swim Chlorine Tablets

Chlorine tablets are designed to be used with a dispenser but can be placed in the skimmer and gradually release chlorine over a period of 3-14 days. They should ideally be used in conjunction with a granular chlorine product.

All Swim Multi Pool Tabs

These tablets contain the most concentrated chlorine available today for domestic pools with each tablet containing approximately 90% chlorine. Multi Pool tabs also have a built in algicide to help prevent your pool water from turning green along with a clarifying agent to ensure your pool water remains crystal clear.

Sodium Hypochlorite

Sodium Hypochlorite is very effective at killing algae but has the disadvantage that it has a high pH and the water balance of your pool will therefore need more regular maintenance.

All Swim Bromine

Bromine has the advantage that it has less odour than chlorine and it is recommended for spas because it is highly effective when temperatures exceed 28 degrees centigrade. Bromine levels in spas should be maintained at 4-6ppm.

All Swim Non-Chlorine Shock

A non-chlorine oxidiser compatible with both chlorine and non-chlorine systems it destroys non-filterable wastes and creates sparkling water.

7 Pool and Spa Water Basics

Other Sanitisers

As well as chlorine and bromine there are numerous other water treatment products available on the market today including Baquacil and Blue Crystal both of which are non-chlorine based systems. In addition to these you could also look at water treatment systems such as Ionic Purifiers, Prozonators, Salt Chlorinators and Nature 2:-

Ionic Purifiers

Ionic purifiers utilise copper and silver; these are acknowledged as effective bactericides, and algicides respectively and is an ideal system for those people wishing to swim in a chlorine free environment.

Prozonators

Prozone purifies pool and spa water making it clean and clear – it also reduces the need for chemicals by up to 90%. They can be fitted to pools or spas but most spas sold in the UK now come with a prozonator already installed, please check your handbook for further details.

Salt Chlorinators

These systems work by a process of electrolysis, using a cell they transform salt water into chlorine gas. This gas then destroys all the micro organisms and ensures a correct level of free chlorine in the pool at all times.

Nature 2

The Nature 2 system utilises a mineral ceramic cartridge that lasts six months and reduces the need for chlorine dramatically, as the system reproduces nature's own purification process to keep the water clearer for longer.

If you are interested in a water treatment system All Swim can supply further details and advise on the system best suited to your individual requirements.

Balancing the pH

Apart from checking the chlorine it is also important that the pH is measured and balanced. pH is a measure of acidity and alkalinity in the water and it is measured on a scale from 0-14 with 7 being neutral; for swimming pools and spas the pH needs to be kept between 7.4 – 7.6. If the pH level is too high the effectiveness of the chlorine is reduced which could cause the water to turn cloudy, whilst, if the pH is too low, skin and eye irritation may also occur.

pH is reduced by the addition of an acid (All Swim Pool Acid) and increased by the addition of an alkali (All Swim Pak 2).

8 Pool and Spa Water Basics

Controlling the Total Alkalinity

Total Alkalinity is important in your pool water because it can make balancing your pH very difficult and can cause pH bounce (where the pH fluctuates considerably in short periods of time). Total Alkalinity is the measure of the actual amount of alkali (calcium carbonate) present in the water, if it's too high it can buffer the pH and cause cloudy water due to the formation of scale and if too low it makes the pH almost impossible to control.

Like pH the total alkalinity is reduced by the addition of an acid (All Swim Pool Acid) but is increased by the addition of Sodium Bicarbonate (All Swim Pak 1). The ideal total alkalinity level is between 80 -120 ppm.

Adjusting the Water Hardness

Water hardness is measured by testing for the amount of calcium and magnesium salts present, the minimum level recommended is 175ppm. If the water is too soft it can affect your pool and spa equipment as the pool water will extract calcium from any available source e.g. pool grouting. If, however, the level is too high it can cause calcium deposits on the pool walls.

Increasing the water hardness is done by the addition of Calcium Chloride (All Swim Pak 3), reduction of calcium hardness is done via the process of dilution.

Recommended Dosing Levels For Swimming Pools & Spas

	<i>Swimming Pools</i>	<i>Spas</i>
Bromine	2 - 4ppm	4 - 6ppm
Free Chlorine	1 - 1.5ppm	2 - 3ppm
pH	7.4 - 7.6	7.4 - 7.6
Total Alkalinity	80 - 120ppm	80 - 120ppm
Calcium Hardness	175 - 500ppm	175 - 500ppm

9 Pool Care at a Glance

Pool Care at a Glance

With an outdoor swimming pool an annual maintenance programme should comprise the following:-

- Recommissioning/Spring Opening
- Weekly servicing
- Winterisation or Autumn Shutdown

An indoor pool would also require regular servicing but does not normally require the normal winterisation programme.

Regular maintenance of your pool is essential and it is always easier if you can get into a routine.

Start of the Season

Remove winter cover, clean and dry thoroughly; then store for the summer

Reconnect pump, filter and heater and thoroughly test

Remove expansion bottle in skimmer

Refit skimmer and collar assembly and basket

Clean pool and remove all leaves

Backwash filter

Check and adjust pool water

During the Season

Check pool cleanliness and vacuum as necessary:-

A pool vacuum system works in a similar way to a domestic carpet vacuum, but uses water instead of air. Some wind blown debris is bound to sink to the floor of the pool and to remove this most pool owners vacuum their pools once a week. The vacuum hose and extending handle are attached to the vacuum head, the hose is then filled with water. This is easily done if the vacuum head is allowed to rest on the pool bottom, whilst the hose is pushed vertically down into the water in an overhand manner - this will expel all the air easily. The hose is then attached to the Kornea vacuum plate, which in turn is fitted over the skimmer basket after the removal of the floating collar.

Alternatively, the easier way to vacuum the pool is by investing in an automatic pool cleaner, the principles of operation are the same, except you no longer need to vacuum the pool yourself as it can be done automatically either day or night.

During the Season

Vacuuming Procedure:

- Backwash filter to ensure maximum suction
- Fit vacuum head, hose and handle
- Fill vacuum hose
- Fit Kornea to hose and attach to skimmer
- Shut off low suction valve / main drain
- Vacuum pool
- Remember to always keep the vacuum head below water level
- Backwashing of the filter may be necessary during vacuuming, if the pool has been allowed to get very dirty
- If while vacuuming the suction is lost completely or reduced in power, check the following points:-
 - Does the filter need backwashing?
 - Is the skimmer basket full?
 - Is the pump basket full?
 - Is the kornea seated on the basket properly?
 - Is the vacuum head or hose blocked with leaves?

Backwash Filter

The filter takes out fine particles from the water and will subsequently become partially blocked, when this happens the pressure gauge on the filter will indicate a higher reading; when this reading is 5lbs higher than normal running pressure the filter needs to be backwashed. However, we would recommend backwashing the filter at least twice a week.

Note: When backwashing your filter do not backwash into streams, rivers or lakes.

Clean the Skimmer Basket

The skimmer basket(s) need to be emptied regularly as the flow of water to the filter can be minimised if they are full of debris.

Clean the Pump Basket

In front of the pump is a basket which prevents any debris entering the pump and causing damage to the impellor. To empty it, turn pump off, close the multiport valve and the valves in front of the pump. This will prevent the water level falling back in the pipes then remove and clean the basket.

Check Water Balance for pH, sanitise and adjust as necessary

Maintain Water Clarity

Sometimes your pool water can look dull and cloudy, this is caused by small particles being suspended in the water. The filter can sometimes remove these particles, however, if they are too small they will remain in suspension and a flocculant/coagulating agent needs to be added. Before adding a flocculant backwash the filter and check the sight glass to ensure the water is clear; then add your flocculant: All Swim recommends the use of Crystal Clear as a flocculating agent.

Prevent Algae Forming

This can be done by maintaining the correct sanitiser levels and also by the addition of Kleen Pool, a copper based long life algicide which can help stop algae forming.

End of Season / Winterisation

In winter as water freezes, care must be taken to stop damage occurring to the pool as well as the expensive pool equipment. Pool steps and diving boards should be removed and stored and all the pool equipment drained and serviced.

In order to ensure that the pool water stays clean and sparkling through the winter, make sure that the pH is correct, shock dose the pool with All Swim shock granules and add the required amount of liquid Winterclear - a longlife winter algicide (5 Litres per 12,000 gallons) .

The pool must be kept clear of leaves otherwise they will stain the liner, this can be carried out by the use of a leaf net or by the fitting of a winter debris cover.

12 Pool Care at a Glance

The skimmer must be winterised to prevent it being damaged by ice, this is carried out by first removing the skimmer flap or floating collar assembly as well as the skimmer basket. A plastic bottle securely tightened and weighted with stones is then placed in the skimmer - this acts as an expansion bottle and in freezing weather will be compressed by the ice instead of cracking the skimmer body.

The pump, filter and heater must all be drained but before doing so make sure the filter has been well backwashed to prevent the solidifying of dirt in the filter media over the winter period.

The pump has two drain out plugs, one on the bottom of the pump strainer pot and the other on the impellor housing, the pump is then best removed and stored in a warm dry atmosphere for the winter in order to prevent condensation attacking the pump windings. The filter is then drained by opening the plug at the base.

If a heat pump is fitted, the two unions should be loosened and a hosepipe inserted into the top connection to enable the heat exchanger to be flushed out with clean water.

Regular monitoring of the pool in winter is essential, as rainfall will increase the level of water in the pool. If the water level rises to coping level and subsequently freezes, it could cause lifting of the pool coping stones.

Summary of Winter Care

- Remove solar cover, clean and dry thoroughly; then store for the winter
- Clean pool and remove all leaves
- Backwash filter and ensure water level is at normal height (halfway up skimmer)
- Check and adjust pH
- Add winterising chemicals
- Take out skimmer collar assembly and basket
- Put expansion bottle in skimmer
- Fit winter debris cover
- Drain pump, filter and heater
- Store pump in a warm dry atmosphere
- Ensure pool water level does not rise to coping level

13 Speciality Pool Products

Speciality Pool Products

Crystal Clear

Cationic liquid pool clarifier - it coagulates particles that are too small to be taken out by the filter, these larger particles then sink to the bottom of the pool for vacuuming or are trapped in the filter.

Granular Flocc

Aluminium Sulphate - this product has the same function as Crystal Clear but is in granular form.

Clear Tabs

Aluminium Sulphate - again this product has the same function as Crystal Clear and Granular Flocc but is in tablet form and placed in the skimmer basket.

Winterclear

A long life copper based winter algicide, to help prevent algae growth over the winter period.

Filter Cleaner

A detergent to clean both cartridge filters and sand bed filters.

Conditioner / Stabiliser (Cyanuric Acid)

When unstabilised chlorine is being used for the day to day running of a pool it reduces the amount of chlorine being destroyed by sunlight.

Tile & Liner Cleaner

A general purpose cleaner for cleaning tiles, liners, chrome, masonry and other pool surfaces. Regular cleaning will help prevent a build up of calcium and grease.

14 Spa Care at a Glance



Spa Care at a Glance

As well as water treatment, regular draining and refilling is a normal part of spa maintenance, and should be done every four weeks or more frequently if the spa is heavily used. A spa should also be regularly shock treated (preferably weekly) by raising the sanitiser to twice its normal level.

Note: It should be remembered not to use the spa until the sanitiser levels have returned to normal.

The spa cartridge(s) should also be regularly cleaned and changed (approximately every two weeks) as they can become blocked with pollutants e.g. grease, skin and make up. We recommend that all customers have two sets of cartridges so the spare set can be inserted while cleaning the other. The cleaning of a spa cartridge is done by soaking it overnight in a solution of filter cleaner; dirt, grease and other pollutants are then removed.

15 Speciality Spa Products

Speciality Spa Products

Spa Defender/Stain Scale & Control

A scale and stain inhibitor which prevents calcium build up on spa walls and metal surfaces of spa equipment.

Spa Metal Gon

Prevents metals from staining spa surfaces.

Spa Surface Cleaner

A compatible cleaner which can be used to clean the waterline and spa surfaces.

Polysheen

A flocculating agent which helps achieve crystal clear water.

Spa Antifoam

A spa can foam when the air jets are being used, antifoam reduces this foaming effect. However, if the spa suffers with foam, this is an indication of poor water quality and the water should now be changed.

Spa Filter Brite

Designed to clean the cartridge filter of your spa.

Spa Lite

A specially formulated oxidiser and clarifier. Destroys non-filterable wastes and creates sparkling spa water.

Spa Flush

When added before draining it will breakdown oily build ups and biofilm in spa pipework which could harbour harmful bacteria.

Optimiser Plus

This product improves overall water comfort while protecting your spa's heater and improving the performance of your sanitiser.

Spa Fragrances

These are specifically formulated for your spa and are available in numerous different fragrances.

16 Problem Solving

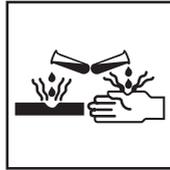
Problem Solving

PROBLEM	POSSIBLE CAUSE	REASON	SOLUTION	PRODUCT REQUIRED
Cloudy Water	Build up of dirt & bather pollution	Ineffective chlorine levels or poor filtration	Backwash filter, then Shock treat. Add clarifier to 'polish' water	All Swim Shock, Crystal Clear
	Start of algae growth	Insufficient levels of chlorine	Shock treat. After 24hrs backwash filter. Maintain chlorine level above 1.5ppm. Prevent reoccurrence of algae growth	All Swim Shock, All Swim Cyanachlor Algicide or Kleen Pool
	Chlorine ineffective	Over stabilisation	Dilute pool water and shock treat	All Swim Shock
	Ineffective filtration	Filter blocked or filter media needs renewing	Check filter media or cartridge	See ineffective filtration for more detail
	Suspended particles	Precipitation of salts due to high pH or high alkalinity	Correct pH and/or alkalinity	All Swim Pool Acid, Crystal Clear, Clear Tabs
Unpleasant Water	High combined chlorines	Free chlorine levels too low	Dilute pool water and shock treat	All Swim Shock
Eye Irritation	Detergents from cleaning compounds getting into pool water	Reaction between chlorine and detergent	Use chlorine compatible cleaners	All Swim Tile & Liner Cleaner
Sore eyes/throat	Water too acid or alkaline	pH too low pH too high	Correct pH Correct pH	All Swim Pak 2, All Swim Pool Acid
Chlorine level difficult to maintain	Sunlight destroying chlorine	Chlorine not stabilised	Use stabiliser or stabilised chlorine	All Swim Conditioner, All Swim Cyanachlor
	Build up of pollutants	Insufficient chlorine	Shock treat	All Swim Shock
	High water temperature	Organisms multiply more quickly	Increase dose of sanitiser	All Swim Cyanachlor or All Swim Shock
No chlorine reading despite adding chlorine	Chlorine level may be too high	High chlorine level bleaches reagent in test tablet	Allow chlorine to reduce naturally over a period of time	Contact All Swim

17 Problem Solving

PROBLEM	POSSIBLE CAUSE	REASON	SOLUTION	PRODUCT REQUIRED
pH too low	Low pH of local water supply	Insufficient alkali	Add alkali - ideal pH 7.4-7.6	All Swim Pak 2
	Use of acidic chlorine donors	Insufficient alkali	Add alkali - ideal pH 7.4-7.6	All Swim Pak 2
pH too high	High pH of local water supply	Insufficient dry acid	Add dry acid - ideal pH 7.4-7.6	All Swim Pool Acid
	Use of alkaline chlorine donors	High alkalinity	Reduce alkalinity to 125ppm check pH	All Swim Pool Acid
	Salts being leached from new concrete pools	Self correcting over a period of time	Add dry acid - ideal pH 7.4-7.6	All Swim Pool Acid
pH erratic	Insufficient bicarbonate to buffer pH	Low total alkalinity	Add bicarbonate - ideal 80-120ppm	All Swim Pak 1
pH locked	Too high a level of bicarbonate	Topping up from mains water can increase alkalinity in hard water areas	Reduce alkalinity to 80-120ppm check pH	All Swim Pool Acid
Low Alkalinity	Bicarbonates reduced by dilution, particularly in soft water areas	Mains water has low levels of bicarbonates	Add bicarbonate minimum 80ppm, consult All Swim	All Swim Pak 1
Pool walls feel slimy	Algae growing	Insufficient chlorine	Shock treat to kill algae, sweep and vacuum pool. Prevent recurrence with algicide, brush pools walls	All Swim Shock, Algicide or Kleen Pool
	Dirt on pool wall at water level	Irregular cleaning of surfaces	Clean with sponge & suitable detergent	All Swim Tile & Liner Cleaner
Sharp edges around tiles	Grout being leached by water	Water too soft	Re-grout pool. Increase calcium levels to minimum 175ppm. Consider changing to All Swim Shock Granules	All Swim Pak 3, All Swim Shock Granules
Ineffective Filtration	Incorrect sand level in filter	Not enough sand to filter out particles	Renew and/or top up sand	
	Correct level of sand	Blocked filter/filter sand	Backwash & use filter aid	Filter Cleaner
	Cartridge filter in poor condition	Filter allowing particles through	Renew Cartridge	Crystal Clear

Hazard Warning Symbols



1 Corrosive



2 Irritant



3 Oxidising



4 Harmful



5 Dangerous for the environment

Chemical Hazard Recognition

Cyanachlor	5,2	Filter & Cartridge Cleaner	2
Shock	3,5,1	Springclene Acid Wash	1,2
Quick Dissolve Shock	3,5,1	Clear Tabs	2
Chlorine Tablets	3,2,5	Spaguard Balance Pak 200	2
Multi Pool Tablets	3,2	Spaguard Balance Pak 300	2
HTH	1,3,5	Spaguard Lo 'n' Slo	2
Sodium Hypochlorite	1	Spaguard Stain & Scale Control	1
Pak 2	2	Spaguard Chlorinating Concentrate	4,5
Pak 3	2	Spaguard Brominating Concentrate	4,5
Pool Acid	2	Spa Lite	1,3
Algae Eliminator	1,5	Filter Brite	1
Algicide	1	Surface Cleaner	2
Winterclear	2	Bromine Tablets	1,5
Tile and Liner Cleaner	2	Baquacil	2
Granular Floc	2	Baquashock	1
Kleen Pool	2	Baquacheck	1
		Non Chlorine Shock	1,3