SPA

SPA OWNER'S HANDBOOK

A guide to keeping your spa water clear and healthy

Fi-Clor® Spa Care Products

The Fi-Clor Spa Owner's Handbook provides the basic information you need to enjoy your spa to the full. Follow some simple guidelines, use the Fi-Clor Spa range of chemicals, and your spa will provide years of satisfaction and pleasure.

What is a spa?

What it's definitely NOT is a tank you fill up with water and treat as though it was a small swimming pool. It is filled with water but there the similarity ends. Water in a spa is maintained at a much higher temperature than in a pool. It contains only a fraction of the water a pool holds, so the potential for pollution per litre of water is much greater. For example, five people using a 750 gallon spa is the equivalent of 200 people using a 30,000 gallon pool.

So do you need to be a chemist to look after your spa?

No, but you will need to read and become familiar with the manufacturer's instructions provided with your spa and gain a little understanding of the chemicals you'll be using. Follow a few simple rules and you can:

- Ensure the water is bacteria free.
- Protect the spa finish.
- Extend the life of spa equipment.

Taking care of your spa water

You need to add chemicals to keep the water free from bugs and bacteria which could live quite happily in your spa. Bacteria needs little encouragement to flourish; a nice dark warm place is ideal, and where better than in the spa filter or pipework?

Water is the most important part of your spa, indeed all the equipment is designed to either hold water, move it, filter it or heat it, so if you take care of the water, it will take care of you.

The care process can be divided into three parts:

1. Starting up your spa
2. The circulation / filtration system.
3. The chemical treatment regime.

1. STARTING UP YOUR SPA

When filling your spa for the first time (commissioning) or when refilling after it has been empty for a period, it is strongly recommended that a shock chlorination should be carried out on the cold fresh water. Fi-Clor Spa Shock or Fi-Clor Superchlorinator are ideal products for this purpose as they are unstabilised chlorine donors and will deliver the maximum effectiveness.

The free available chlorine level should be taken to either 25mg/l (ppm) for a minimum of two hours, or 50mg/l (ppm) for a minimum of one hour.

(see instructions on pack label for further details)

While the spa is being chlorinated to these high levels, the water must be allowed to flow to all parts of the system, regularly monitoring the chlorine residual to ensure that it does not fall below the specified level at any time. Where an air blower is fitted, it should not be run for the first 15 minutes to minimise the formation of aerosols (fine spa water mist).

During shock chlorination, the pH should be maintained within the range of 7.2 – 7.6 in order to ensure maximum effectiveness of the disinfection process (see page 8 for further information on this aspect of spa water treatment).

It's important that after the one or two hour shock chlorination period, the spa should be drained, thoroughly flushed and refilled with fresh water, and run at normal disinfection levels (see section on disinfection for further information). If this is not possible for practical reasons, the chlorine level should be reduced using Baquacil chlorine/bromine neutraliser (sodium thiosulphate), or alternatively the spa may be left with the cover off and the chlorine level allowed to fall naturally. The spa should then be drained, thoroughly flushed and refilled with fresh water as above.

The make up of the mains water supply can vary considerably across the country; you may even have a non-mains source such as spring or well water. As a result, different levels of pH, total alkalinity, calcium hardness and mineral content will be found in the water that you fill your spa with. In hard water areas of the UK or if there is a high mineral content, it is strongly recommended that Fi-Clor Spa Anti-Scale is added when your spa is initially filled with fresh water and also every time it is topped up or refilled after periodic draining. This should help to minimise scale formation and staining of the spa surfaces.

2. THE CIRCULATION/FILTRATION SYSTEM

This consists of a circulating pump and filter; the pump moves the water through the system. The filter removes small particles, which if left in the water would turn the water turbid. It's important to follow the manufacturer's instructions as to how long the circulating pump should run. Periodically the filter will require cleaning. The filter will invariably be of the cartridge type which can be cleaned with Fi-Clor Spa Cartridge Cleaner. This is essential to remove precipitated minerals and greasy deposits that have been trapped in the filter which if left, will impair the filter's performance and cause the water to become cloudy.

Your spa water should always look clear, bright and inviting. If, for any reason, it doesn't, it can usually be brought back to life with Fi-Clor Spa Water Clarifier. This assists the efficient removal of small suspended particles, which in sufficient quantity will cloud the water.

3. THE CHEMICAL TREATMENT REGIME – Unwelcome visitors

Your spa has been filled with fresh water straight from the tap. This water is good enough to drink, so why should it require further treatment? The simple answer is that when you get into the spa, you carry with you numerous small particles, including bacteria. Bacteria are so small they're invisible to the naked eye, but that doesn't mean they can be ignored.

Living organisms such as bacteria need, as we do, food and water to survive and flourish. The water is already present; the food is usually in the form of organic material and because you consist mainly of organic matter, each time you climb into the spa you introduce this in the form of skin particles which are covered in bacteria, along with other nutrients. You must, therefore, treat the water and kill off these bacteria.

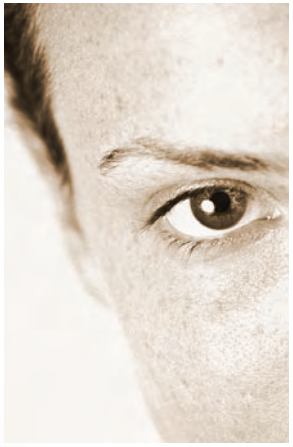
Don't underestimate the size of the potential problem. Bacteria multiply rapidly and, if left untreated, their numbers could increase to 20 million in just eight hours and 160 million in nine hours! By the time the water starts to look cloudy, there could be many millions of bacteria per five litres of water. So it makes sense to control them in the early stages rather than when the numbers are up in the billions.

It is, therefore, crucial to treat the water correctly, using Fi-Clor Spa Bromine Tablets, or Fi-Clor Spa Chlorine Granules. Bromine or chlorine sanitise the water, killing any living micro-organisms, but they also act as oxidisers; chemically burning out the dead micro-organisms and other organic material present in the water. We will consider each of these sanitisers in more detail shortly. Meanwhile remember:

Effective chemical treatment + Effective filtration = Clean, inviting, safe water.

HOW DOES THE BROMINE WORK ?

Fi-Clor Spa Bromine Tablets contain an active ingredient named 1-bromo-3-chloro-5,5-dimethyl hydantoin. These tablets can only be used in a feeder device or floating dispenser – please refer to the manufacturer's manual for operational details. Dose the required number of tablets into the feeder and resume circulation. If there is no automatic controller, the level of bromine in the spa can be raised or lowered by changing the flow rate through the feeder. The bromine tablets dissolve in the spa water and produces hypobromous acid; this is the compound that will kill all the bacteria. It is called "total bromine" and this is what you will be testing for. You need a residual of between 4 – 6 mg/l, and how you test for this will be dealt with later in the booklet.



Occasionally there may be a build up of unwanted by-products from the bromination process. These can be easily dealt with using Fi-Clor Spa Non-Chlorine Shock at a rate of 75gms per 4.5m^3 (1,000 galls).

The addition of this product will also regenerate 'spent' bromine.
Like chlorine, bromine will be destroyed by sunlight but at a much, much slower rate.

NOTE Do not use cyanuric acid stabiliser with a bromine based disinfectant as it will not work.

HOW DOES THE CHLORINE WORK ?

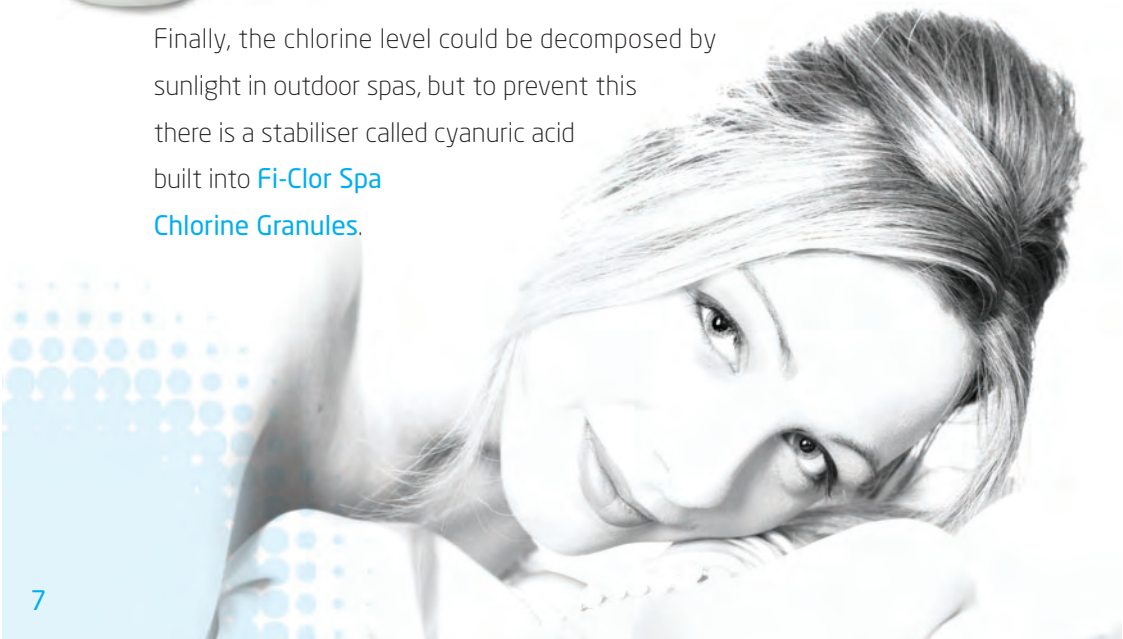
Although they belong to the same chemical family, there are some differences between chlorine and bromine. When you dissolve the Fi-Clor Spa Chlorine Granules in your spa they produce hypochlorous acid; this is the active compound that will kill the bacteria and other unwanted pollution introduced into your spa.

The dose rate is 2gms per m^3 (220gall) to increase the free chlorine by 1mg/l (ppm). Maintain the level at 2-5mg/l (ppm). See pack for full details.

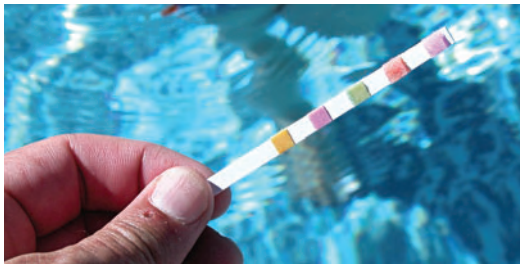
As the chlorine does its job killing the bacteria it can form other compounds called combined chlorine (chloramines). These compounds have no killing power and are, in fact, a nuisance. They need to be removed by periodically shock dosing the pool with Fi-Clor Spa Non-Chlorine Shock.

The pH of your spa water is much more important for chlorine than it is for bromine. The pH needs to be kept between 7.2 – 7.6 to ensure optimum conditions for the chlorine to kill unwanted pollution. When necessary you can raise the pH using Fi-Clor Spa pH Increaser (Soda Ash) and lower it using Fi-Clor Spa pH & Alkalinity Reducer (Dry Acid).

Finally, the chlorine level could be decomposed by sunlight in outdoor spas, but to prevent this there is a stabiliser called cyanuric acid built into Fi-Clor Spa Chlorine Granules.

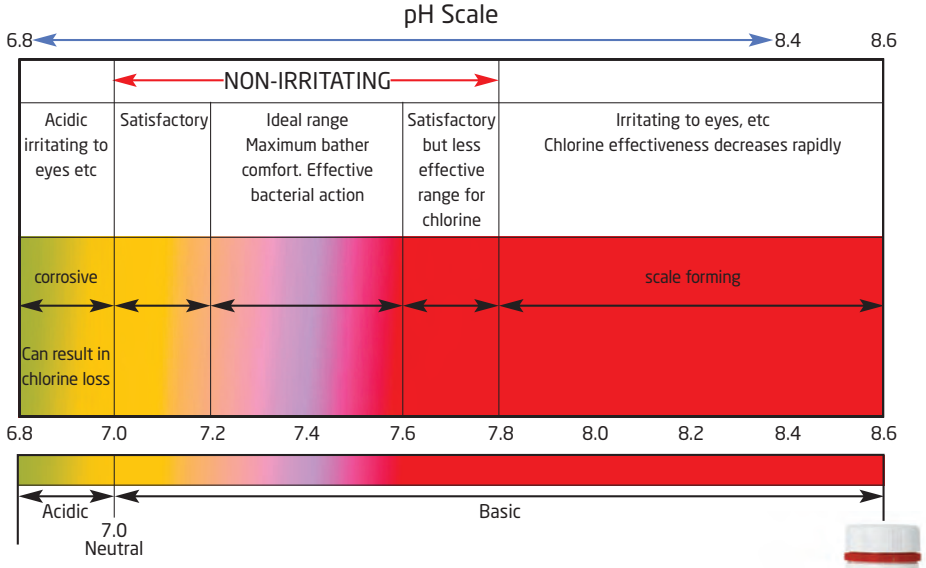


WHAT ELSE DO YOU NEED TO KEEP AN EYE ON ?



For reasons already stated it's advisable to test regularly for pH, and also check from time to time to determine the levels of alkalinity and calcium hardness.
As with chlorine and bromine, all these tests can be carried out by using a single test strip from the pack of 50 supplied with the Fi-Clor Spa Starter Kit or a test kit that uses tablet reagents.

pH The pH scale reveals how acidic or basic the water is.



The pH needs to be between 7.2 – 7.6. There are several reasons for operating within this band, the most important being the pH of your mucous membranes (eyes, nose, throat) is about 7.4, so the closer you can keep the pH to this, the more comfortable it will be. A high pH will lead to cloudy water and excessive scaling. Should any scaling occur, it can be removed using Fi-Clor Spa Anti-scale. Meanwhile, a low pH will create acidic conditions which may corrode the metal parts of the system.

HOW DO YOU CONTROL THE pH ?

If the pH rises above 7.6, reduce it by adding Fi-Clor Spa pH & Alkalinity Reducer (Dry Acid) at a rate of 10gms per m^3 (220 gall).

- From the table below calculate how much pH & Alkalinity Reducer (Dry Acid) is needed. Add this to a clean plastic jug filled with warm water (the warm water will assist dissolution).
- Always add chemicals to water, NEVER add water to chemicals.
- Mix the product until it has completely dissolved.
- Carefully pour the solution round the spa (do not pour it in one spot or some alkalinity may be destroyed).
- Allow at least 15 minutes before retesting the pH.

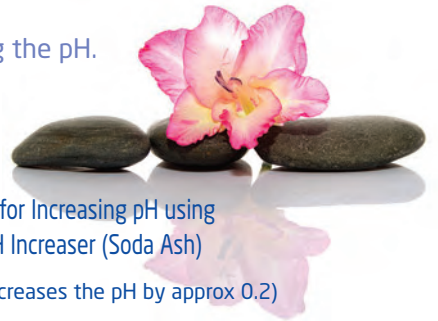
Gallons	M^3	0.2
250	1.1	11gms
500	2.3	23gms
750	3.4	34gms
1000	4.6	46gms
1500	6.8	68gms

Dosing Chart for Decreasing pH using Fi-Clor Spa pH & Alkalinity Reducer (Dry Acid)
(Each dose decreases the pH by approx 0.2)

On the other hand, if the pH is below 7.2, add Fi-Clor Spa pH Increaser (Soda Ash) at a rate of 5gms per m^3 (220 gall).

- From the table below calculate how much Fi-Clor Spa pH Increaser (Soda Ash) is needed. Add this to a clean plastic jug filled with warm water (the warm water will assist dissolution).
- Again add the chemical to water, not the water to the chemical.
- Mix the product until it has completely dissolved.
- Carefully pour the solution round the spa.
- Allow at least 15 minutes before retesting the pH.

Gallons	M^3	0.2
250	1.1	6gms
500	2.3	12gms
750	3.4	17gms
1000	4.6	23gms
1500	6.8	34gms



Dosing Chart for Increasing pH using Fi-Clor Spa pH Increaser (Soda Ash)
(Each dose increases the pH by approx 0.2)

Before making any pH adjustments, it is recommended that the total alkalinity is tested and adjusted as necessary (see below).

TOTAL ALKALINITY

The alkalinity in the spa water protects the pH against sudden changes. The ideal level should be between 80 – 160mg/l. If the alkalinity falls below 80mg/l the pH could fluctuate considerably. This could create corrosive water conditions that may cause unnecessary damage to your spa equipment. Also, the water could become uncomfortable for users. To increase the alkalinity, add Fi-Clor Spa Alkalinity Increaser as directed on the label. Should the alkalinity become too high, the pH will be very difficult, if not impossible, to adjust. In the event of high alkalinity, reduce using Fi-Clor Spa pH & Alkalinity Reducer (Dry Acid). Dose according to the instructions on the label.

NOTE

Unlike pH reduction, the solution of Fi-Clor Spa pH & Alkalinity Reducer (Dry Acid) should be poured **in one spot** in order to achieve the desired result of lowering the alkalinity.

CALCIUM HARDNESS

The level of calcium found in the water used to fill your spa depends on the area where you live. Your Fi-Clor Dealer will probably know the likely calcium hardness of the local mains water. If you have the test strips supplied with the Fi-Clor Spa Starter Kit you will be able to determine the calcium hardness levels of the mains water or in the spa by reference to the total hardness bar on the strip. The ideal level depends on the type of spa shell you have:

In acrylic spas calcium hardness should be a minimum of 175mg/l.

In tiled spas the minimum level should be 250mg/l

This should provide sufficient calcium to satisfy the water's 'calcium demand'. Calcium hardness can be increased using Fi-Clor Spa Hardness Increaser.

In hard water areas with a high calcium hardness level, Fi-Clor Spa Anti Scale should be added as per the instructions on the label to prevent scale formation.

WHAT ELSE DO YOU NEED TO DO ?

Temperature

Most modern spas have a built-in temperature gauge but if one is not supplied, invest in a good quality thermometer.

The maximum temperature should be 40°C. Most people find a temperature of 37°C to be most relaxing; temperatures above this tend to feel uncomfortable.

The important thing is to set the temperature that feels most comfortable to you. Due to the higher temperature your spa operates at, you may occasionally get a little scale formation, but again this can easily be prevented or removed using Fi-Clor Spa Anti-scale.

Keep your spa/hot tub clean

Just like your bath, grease and body fats can collect at the waterline, which not only looks unsightly but can prove to be a breeding ground for bacteria. It is good practice to clean this off regularly using Fi-Clor Spa Surface Cleaner. This is specially formulated to clean away body fats and grease easily and quickly, and can also be used to clean the spa interior when it is periodically drained before it is refilled with fresh water.

NOTE It is essential that you do not use an abrasive cleaner on an acrylic spa / hot tub as this will damage the surface.

Draining your spa

Although the water is constantly being re-circulated, filtered and sanitised, micro-organisms capable of withstanding normal sanitiser levels can survive out of reach in the circulation system. On rare but not unknown occasions, these can give rise to serious infective illnesses. For this reason, it is a good idea to periodically shock treat the water, then drain the spa and refill with fresh water. The frequency of draining will depend on usage; if your spa is just for family use, it should ideally be drained and refilled every two months and at least every three months.

To help combat anything that might be harmful to health, shock the spa water prior to draining using Fi-Clor Spa Shock. In this context, shock dosing means raising the chlorine level well beyond normal concentrations – to 50mg/l (ppm) for one hour, or 25mg/l (ppm) for 2 hours. The cap on the container can be used to measure the required quantity of Fi-Clor Spa Shock for your size of spa. See the instructions on the pack for more details.

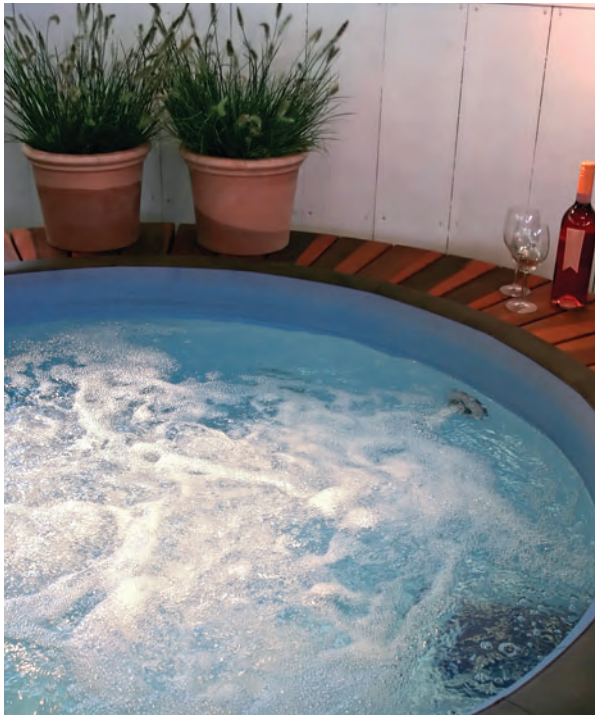
Keep the circulation running throughout, then drain the water and refill with fresh. If using a hosepipe, allow it to run down a drain for several minutes before putting it into your spa so as to flush out any bacteria that may be present. Make sure the pH and bromine or chlorine levels are within recommended limits before operating the jets and using the spa again.

NOTES

We strongly recommend you also shock dose the water on first commissioning the spa as outlined earlier.

Removing foam

The water in your spa is circulated very quickly; air is also introduced regularly and, together with the build up of body oils, foam can be created on the water's surface. While this will cause little harm it's not attractive and needs to be removed. Fi-Clor Spa Anti-Foam is specially designed to remove this unsightly foam, and if you use it on a weekly basis, this will ensure that foam is not a problem.



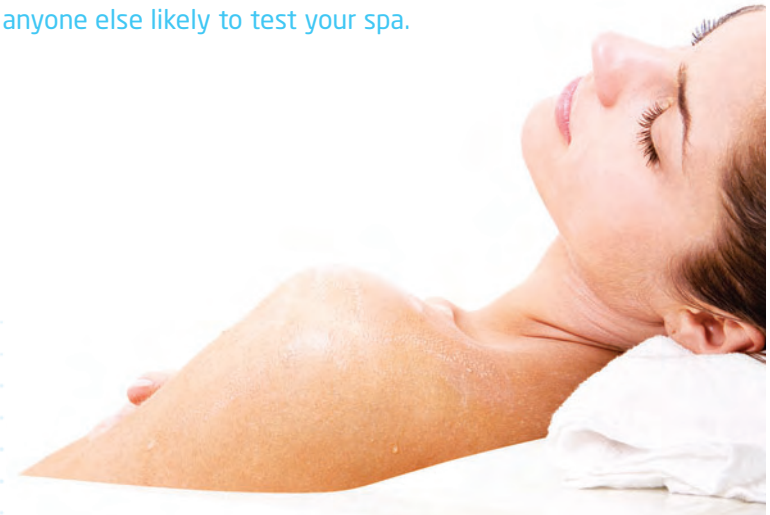
TESTING YOUR SPA WATER

In general you only need to carry out two simple tests, total bromine (or free chlorine) and pH. These tests may be simple, but that doesn't mean care should not be taken when carrying them out. The pH and bromine or chlorine values should be checked daily, and adjusted if necessary before use.

There are two other tests that could affect your spa water quality; alkalinity and calcium hardness. These can be tested accurately by your Recommended Fi-Clor Dealer on a monthly basis or when a problem arises. (The test strips provided with the Fi-Clor Spa Starter Kits will give you a rough idea whether the alkalinity and calcium hardness need attention).

If you're using a test kit or test strips, here are a few guidelines to help you get accurate results:

- Keep your test kit clean.
- Do not purchase more test strips or test tablets than are needed for the season. If you have an indoor spa which is used throughout the year, keep no more than three months supply.
- Do not touch the test tablets or reagent pads on the test strips when taking tests.
- Make sure there is no colour impairment to your eyesight or to the eyesight of anyone else likely to test your spa.



TEST KITS

When investing in a test kit, it's important to choose the correct one for the sanitiser you're using. Test kits are clearly marked according to whether they are to be used with Bromine or Chlorine. If in any doubt, ask your Approved Fi-Clor Dealer who will be happy to advise you.

- In order to obtain accurate results, it is essential to closely follow the test kit manufacturer's instructions.
- Note the results and if necessary add adjustment chemicals as required (see previous sections).
- Should you obtain results that you don't understand, take a sample of your spa water to your recommended Fi-Clor Dealer who will test it and offer advice.

SAFETY

Handled correctly and with respect, your spa chemicals are perfectly safe. However if you misuse them or fail to follow instructions, the consequences can be potentially serious, so there are a few rules that need to be followed.

- Keep spa chemicals in their original containers. All Fi-Clor Spa range products are supplied in UN approved containers.
- Keep spa chemical containers sealed when not in use.
- Keep all chemicals locked up and out of the reach of children and pets.
- Read all labels to ensure you understand what the chemical is, how it is to be used and what it will do.
- Never mix chemicals together.
- When mixing chemicals with water always add chemicals to water never water to chemicals.
- Store all your Fi-Clor Spa chemicals in a secure, cool, dry place.
- Never store your Fi-Clor Spa chemicals in direct sunlight.
- Always handle your Fi-Clor Spa chemicals with care.
- Always measure your spa chemicals accurately.
- Should you spill any spa chemicals, clean up the spill immediately. If they are in solid form, use a clean dustpan and brush and dispose of them by adding small amounts at a time to the spa. Do not put chemicals back into their original container; do not use a domestic vacuum cleaner. If in any doubt contact your local Fi-Clor Dealer who will be happy to advise.
- Never inhale chemical fumes.
- If any chemical comes into contact with your skin, wash off immediately with copious amounts of fresh water.
- If any chemicals come into contact with your eyes, nose or mouth, wash off with fresh water and seek medical attention immediately.

With thanks to Sundance Spas for use of their photographs.

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	SOLUTION
Eye and/or skin irritation	Excessive sanitiser levels	Dilute spa water with fresh water
	Build up of disinfection by-products	Dilute or completely refill spa with fresh water
	Allergic reaction to sanitiser	Consider changing to a chlorine/bromine free system such as BaquaSpa
	The pH outside the acceptable range	pH over 7.6; reduce with Fi-Clor Spa pH & Alkalinity Reducer (DryAcid) pH under 7.2; raise with Fi-Clor Spa pH Increaser (Soda Ash)
Foaming	Build up of contaminants – body oils or cosmetics	Treat with Fi-Clor Spa Anti-Foam
Smells	Build up of organic pollution and/or combined chlorine	Shock dose with Fi-Clor Spa Non-Chlorine Shock
Staining on the shell	High concentration of metals in the water	Treat with Fi-Clor Anti-Scale or take a water sample to your Recommended Fi-Clor Dealer for analysis
Coloured water	As above	As above
Cloudy water	Low sanitiser level	Test regularly and maintain sanitiser level; 2-5mg/l (Chlorine) 4-6mg/l (Bromine)
	Ineffective filtration	Check cartridge filter; either clean using Fi-Clor Spa Cartridge Cleaner or replace filter
	Suspended solids	Treat with Fi-Clor Spa Water Clarifier to aid filtration
	Build up of dissolved solids	Drain and refill with fresh water
Excessive scaling	Water out of balance	Take water sample to your Recommended Fi-Clor Dealer for analysis

BISHTA PROMOTING SAFE SPA WATER

Fi-Clor® Spa Care Products

ARCH WATER PRODUCTS

SPATA

WATER IS PRECIOUS TAKE CARE OF IT

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