

THE UK'S  
FAVOURITE  
POOL CARE  
PRODUCTS

**Fi-Clor**<sup>®</sup>



# Swimming Pool Handbook





<b>BASICS OF MAINTAINING A GOOD POOL</b>	<b>2</b>
<b>THE FI-CLOR 4 » POINT POOL CARE PLAN</b>	
1 » <b>DISINFECT THE WATER</b> (chlorination)	3
2 » <b>REMOVE IMPURITIES</b> (shock dosing)	8
3 » <b>BALANCE THE WATER</b>	
pH	10
Total alkalinity	12
Calcium hardness	13
Balancing the water (summary)	14
4 » <b>PREVENTION OR CURE</b> (of pool water problems)	
Stabilising the water	15
Preventing algae and clarifying the water	17
Cleaning your pool	19
Green water	21
Stains	22
Scale	22
Eye and skin irritation	23
Discoloured water	23
Cloudy water	24
Too much chlorine	24
Chlorine odour	25
<b>SAFETY</b>	
Swimming Pool Safety	26
Pool Chemical Safety	26

This guide is designed to explain the necessary steps to maintain your pool. It is not a substitute for reading and following product labels. If, after reading this guide, you have any pool care questions, please visit our website at [www.fi-clor.co.uk](http://www.fi-clor.co.uk) or consult your local Fi-Clor pool shop.

**CALCULATE THE VOLUME OF WATER IN YOUR POOL.**  
When using Fi-Clor Pool Care Products, it is essential to know how much water has to be treated, and from this the dose rate for the various products. Use the chart below to help you calculate the pool water volume. Measure in feet if you want the answer in gallons or in metres if you want the answer in litres or cubic metres. When you have the answer, record it below.

Go on-line and let the Ready Reckoner on the Pool Care page of [www.fi-clor.co.uk](http://www.fi-clor.co.uk) calculate your pool volume for you.

## POOL TYPE

**RECTANGULAR**

Max. Length x Min. Width x Ave. Depth

L	x	W	x	D	x	6.23 galls
L	x	W	x	D	x	1.0 m <sup>3</sup>

**OVAL**

Max. Length x Min. Width x Ave. Depth

L	x	W	x	D	x	5.54 galls
L	x	W	x	D	x	0.89 m <sup>3</sup>

**ROUND**

Diameter x Diameter x Ave. Depth

L	x	L	x	D	x	4.89 galls
L	x	L	x	D	x	0.79 m <sup>3</sup>

**KIDNEY**

Max. Length x Max. Width x Ave. Depth

L	x	W	x	D	x	5.30 galls
L	x	W	x	D	x	0.85 m <sup>3</sup>

(L=Length W=Width D=Average Depth)

The size of my pool is: \_\_\_\_\_ galls/cu mtrs

### GET HOLD OF A GOOD TEST KIT

A good test kit is essential; a cheap one is a false economy. To get the best from your pool, your test kit should enable you to determine pH, free available chlorine, total alkalinity and calcium hardness. A special test kit to measure cyanuric acid would also be an asset. And don't forget, in the bathing season testing should be done on a daily basis.

Owning your own swimming pool can make every day seem like a holiday, especially if you have an indoor heated pool that allows you take a dip throughout the year. But, like all good things, a pool needs care and attention if you are to get the best out of it.

Ideally, you should be able to enjoy swimming in crystal clear water with a minimum of fuss. And with Fi-Clor's simple **4 » POINT POOL CARE PLAN** you can achieve that ideal – perfect water quality from a complete range of pool care products that will give you clear, bright water throughout the season.

## THE Fi-Clor 4 » POINT POOL CARE PLAN

### 1 » DISINFECT THE WATER POOL SANITISER

Swimming pool water is re-circulated and constantly re-used, and some of the bacteria, viruses and other micro-organisms deposited by bathers must be destroyed before they can pass from one bather to another. So the water must be disinfected using a Fi-Clor **POOL SANITISER**

### 2 » REMOVE IMPURITIES - SUPERCHLORINATE SHOCK TREATMENT

The impurities introduced by bathers need to be removed and by-products from these reactions need to be broken down to achieve good water quality and bather comfort. So the pool should be treated at intervals with Fi-Clor **SHOCK** products.

Follow the Fi-Clor **4 » POINT POOL CARE PLAN**, and you'll have the reassurance of knowing that the water in your pool is clear, blue and free from potentially harmful organisms.

### 3 » BALANCE THE WATER WATER BALANCE

Water must be kept in balance (neither too acidic, nor too alkaline/basic) to ensure the pool, equipment and fittings come to no long-term harm through corrosion or scale formation. The sanitiser you use will also be more effective if the water is balanced. The products you will need are in the Fi-Clor **WATER BALANCE** range.

### 4 » PREVENT OR CURE POOL WATER PROBLEMS PREVENTION OR CURE

The regular use of Fi-Clor Prevention or Cure products will avoid staining and scale formation from minerals, enhance water clarity and prevent algae. A specially formulated algicide is used for winterising.





# 1 >> DISINFECT THE WATER

Chlorine is used to kill those potentially harmful germs and micro-organisms. It is arguably the most successful broad spectrum sanitiser known to man – broad spectrum because it tackles not only germs which include bacteria, viruses and fungi, but also microscopic plant life such as algae as well. Fi-Clor chlorine-based sanitisers offer a choice of granular or tableted products in which the chlorine is delivered in a solid form that is safe for pool owners to use, but when mixed with water releases a powerful and effective dose of free available chlorine.

## ▶ UNDERSTANDING FREE CHLORINE

**Q. What is free available chlorine?**

**A.** Free available chlorine (FAC) is the amount of chlorine, or sanitiser, left in the pool after dealing with bugs and organic matter already in the water.

**Q. How does free chlorine kill bugs?**

**A.** By a combination of oxidation and complex cell disruption processes.

**Q. What level of chlorine do I need in my pool when using Fi-Clor Pool Care Products?**

**A.** That depends on the type of chlorine you are using. With stabilised chlorines, such as Fi-Clor or Premium 5 Granules or Tablets the free chlorine in your pool should always be in the range 2.0 – 4.0 milligrams per litre (mg/l), often expressed as parts per million (ppm), even when the pool is not in use. With unstabilised chlorines, such as Superfast Granules or Supercapsules, free chlorine should be

kept between 1.0 – 3.0mg/l (ppm). To put this in perspective - if you were looking at Mount Everest, 1ppm would be equivalent to only the top 1cm of the mountain.

**Q. Why should the free available chlorine be at those levels?**

**A.** Below 1.0mg/l (ppm) there may be insufficient chlorine to kill all the bacteria and algae, and there is a danger of infections, rashes and cloudy water. Very high levels of chlorine can lead to bather discomfort, though levels slightly higher than 4.0 mg/l (ppm) are not a major concern with Fi-Clor stabilised chlorines because the release of free chlorine is controlled by the in-built stabiliser in the product (for more on this, see pages 15–16).

**Q. How often should I test the chlorine level in my pool?**

**A.** In the bathing season, this should be done daily, whether the pool is in use or not.

### TEST METHOD

Remove the cap from the Pooltester test kit and rinse it several times in pool water. Fill the Pooltester to the top with the pool water sample to be tested. Carefully drop a DPD No 1 test tablet into the chlorine side, replace the cap and invert the tester several times to ensure the tablet has dissolved. Compare the colour of the sample with the colour standard on the Pooltester, using natural daylight as a background.



Pooltester test kit

## GOING AWAY ON HOLIDAY?

Want to know how to keep the pool chlorinated in your absence? Try one of our 5-Buoy units.

They provide a multi-functional treatment and can last 4–8 weeks depending on the conditions of use, e.g. water temperature and degree of water movement.



5-Buoy

## ▶ USEFUL TIP

If the colour of the sample fades noticeably when the tablet is dissolving, it can be a sign of excess chlorine. Dilute the sample and test again, multiplying the answer by the rate of dilution, e.g. take one part of pool water and mix with three parts of tap water, carry out the DPD No 1 test as normal and multiply the reading by four. Increase the dilution factor for suspected higher readings. If in doubt, consult your Fi-Clor dealer (there may be a charge for water testing).

# 1 >> DISINFECT THE WATER

## ▶ DOSE RATES FOR YOUR POOL

DOSE RATE	IN MY POOL
Premium 5 or Fi-Clor Granules	90g per 11,000 gallons (50m <sup>3</sup> ) will raise the free chlorine by approx 1 mg/l (ppm)
Premium 5 Tablets or Fi-Clor Maxi-Tabs	Approx 2 x 200g tablets per 11,000 gallons (50m <sup>3</sup> ) per week *
Superfast Granules	65g per 11,000 gallons (50m <sup>3</sup> ) will raise the free chlorine by approx 1 mg/l (ppm)
Supercapsules	Approx 2 capsules per 11,000 gallons (50m <sup>3</sup> ) every 5 days *

\* Dosage will vary with chlorine consumption which in turn will depend on such variables as circulation rate, bathing load and temperature

The dose rates of all the chemicals you will need to use in your pool will be calculated for you on the Poolcare page of [www.fi-clor.co.uk](http://www.fi-clor.co.uk)

## IF THE FREE AVAILABLE CHLORINE IS TOO HIGH:

If the chlorine is only a few parts per million above the recommended upper limit for the sanitiser you are using, it will normally fall of its own accord over a few days. For levels where the chlorine is too high for safe bathing, or where it is necessary to reduce chlorine levels quickly, add Baquacil Chlorine/Bromine Neutraliser (sodium thiosulphate).

DOSE RATE	PER 11,000 GALLONS (50m <sup>3</sup> )	IN MY POOL
Baquacil Chlorine/Bromine Neutraliser	350g* will reduce the free chlorine by approx 1 mg/l (ppm)	g will reduce the free chlorine by approx 1 mg/l (ppm)

\* For pools on Bromine, the dose rate is 150g per 11,000 gallons (50m<sup>3</sup>) to lower the bromine level by 1 mg/l (ppm)



## ▶ USEFUL TIP

Take great care when using this product as overdosing can introduce a chlorine demand. To minimise the risk of overdosing, the recommended dose of Baquacil Chlorine/Bromine Neutraliser should be split into three equal applications. Test for free chlorine after each application, allowing approximately 3 – 4 hours for the reaction to take place. If the colour of the sample fades noticeably when the tablet is dissolving, it can be a sign of excess chlorine. Dilute the sample and test again, multiplying the answer by the rate of dilution (see p3). If in doubt, consult your Fi-Clor dealer



# 1 >> DISINFECT THE WATER

The success of the 4>>Point Pool Care Plan depends on the use of quality products and there are none better than Fi-Clor, which also happens to be the most popular brand of sanitiser for domestic swimming pools in the UK.

We set the standard for quality and reliability to give you peace of mind, knowing that you are using top grade products at value for money prices. Whatever your needs, Fi-Clor gives you a complete product line-up to provide an easy and carefree way to perfect water quality – the choice is yours.

## Fi-CLOR STANDARD SANITISER

The standard Fi-Clor range, available in tablet and granular form, is the popular choice for outdoor pools. The in-built stabiliser



prolongs the effective life of the chlorine and makes the water so comfortable to bathe in you may not even realise the chlorine's there.

## Fi-CLOR PREMIUM 5 SANITISER

Our multi-functional Premium 5 products contain extra ingredients allowing them to perform five key pool care tasks simultaneously. They outperform standard stabilised chlorines because they also contain an algicide to help prevent green water and a clarifier to keep the water crystal clear. Ideal for use in outdoor pools where it is necessary to prevent wasteful loss of chlorine to sunlight.

## Fi-CLOR SUPERFAST SANITISER

Possibly one of the most exciting new developments in pool water treatment for a number of years, Superfast Granules and Fi-Clor Supercapsules are made from calcium hypochlorite and contain no stabiliser, which when present in excess, may inhibit chlorine activity.



Superfast Granules are produced by a totally new process enabling them to dissolve rapidly when added to water and produce an impressive 78% available chlorine. The 300g Supercapsules are made from conventional 65% calcium hypochlorite and dissolve evenly in the skimmer basket leaving the pool well protected for 2 – 5 days. Ideal for indoor and outdoor pools, with both granular and tableted versions helping to balance the water in soft water areas.



# 1 >> DISINFECT THE WATER

## ▶ WHICH PRODUCTS ARE BEST FOR MY POOL?

Your choice of sanitiser depends to a large extent on whether you have an indoor pool or an outdoor pool, the properties of the local water supply (i.e. whether you live in a hard or a soft water area) and personal preference; in particular the amount of time you are able to devote to maintaining your pool. Whatever you decide, Fi-Clor will be able to provide a product, or a combination of products that will enable you to get the best results when it comes to achieving perfect water quality.



<p>STANDARD Fi-Clor GRANULES</p> 	<ul style="list-style-type: none"> <li>&gt;&gt; Kills water-borne bacteria</li> <li>&gt;&gt; Stabilised – reduces loss of chlorine to sunlight; ideal for outdoor pools</li> <li>&gt;&gt; pH neutral – easier to keep the water in balance</li> <li>&gt;&gt; Fine particle size – fast dissolving – quickly raises free chlorine</li> </ul>	<p>Where to dose</p> <p>Sprinkle required dose over the surface of the water</p>
<p>Fi-Clor MAXI-TABS</p> 	<ul style="list-style-type: none"> <li>&gt;&gt; Kills water-borne bacteria</li> <li>&gt;&gt; No measuring out – convenient to use</li> <li>&gt;&gt; Stabilised, but less stabiliser per unit of chlorine than Granules – ideal for outdoor pools</li> <li>&gt;&gt; Low pH – simplifies pH control in hard water areas</li> <li>&gt;&gt; Long lasting – less time on routine maintenance</li> </ul>	<p>Skimmer* or circulatory feed</p>
<p>Fi-Clor MINI-TABS</p> 	<ul style="list-style-type: none"> <li>&gt;&gt; Kills water-borne bacteria</li> <li>&gt;&gt; Convenient to use tablets</li> <li>&gt;&gt; Inbuilt stabiliser to prevent loss of chlorine to sunlight – ideal for outdoor pools</li> <li>&gt;&gt; Long lasting; less time on routine maintenance</li> <li>&gt;&gt; Ideal for small circulatory feeders &amp; refillable floating dispensers</li> </ul>	<p>Skimmer*, circulatory feeder or refillable floating dispenser</p>
<p>Fi-Clor PREMIUM 5 GRANULES</p> 	<ul style="list-style-type: none"> <li>&gt;&gt; Multi-functional; contains algicide &amp; water clarifier</li> <li>&gt;&gt; Kills water-borne bacteria</li> <li>&gt;&gt; Helps prevent algae</li> <li>&gt;&gt; Improves water quality</li> <li>&gt;&gt; Fast acting</li> <li>&gt;&gt; Inbuilt stabiliser to prevent wastage to sunlight – ideal for outdoor pools</li> </ul>	<p>Sprinkle required dose over the surface of the water</p>
<p>Fi-Clor PREMIUM 5 TABLETS</p> 	<ul style="list-style-type: none"> <li>&gt;&gt; Kills water-borne bacteria</li> <li>&gt;&gt; Helps prevent algae</li> <li>&gt;&gt; Improves water quality</li> <li>&gt;&gt; Long lasting disinfection</li> <li>&gt;&gt; Helps balance water in hard water areas</li> <li>&gt;&gt; Inbuilt stabiliser to prevent wastage to sunlight – ideal for outdoor pools</li> </ul>	<p>Skimmer* or circulatory feed</p>
<p>5-BUOY</p> 	<ul style="list-style-type: none"> <li>&gt;&gt; 5 actions in only one treatment</li> <li>&gt;&gt; Multifunctional floating dispenser with shock dose, clarifier and algicide</li> <li>&gt;&gt; User friendly – filled and ready to use</li> <li>&gt;&gt; Continuous release of low-level chlorine – prevents loss to sunlight</li> <li>&gt;&gt; Lasts for up to 1 to 2 months – ideal for holidays</li> <li>&gt;&gt; Operates near the pool surface where bugs and algae proliferate – works even when pool is not circulating</li> </ul>	<p>Float dispenser in pool</p>

\*Dosing chemicals via a skimmer over a long period could cause damage to the circulation system. You are advised to fit a feeder device if using tableted products. (If using a skimmer, run the filtration continuously to avoid the build-up of concentrated solutions of chlorine).



# 1 >> DISINFECT THE WATER

## ▶ WHICH PRODUCTS ARE BEST FOR MY POOL?

<p><b>SUPERFAST GRANULES</b></p> 	<p>Chlorine content (% av.Cl<sub>2</sub>)</p> <p><b>78</b> Calcium Hypochlorite</p>	<ul style="list-style-type: none"> <li>&gt;&gt; Kills water-borne bacteria and oxidises organic matter, effective at killing algae</li> <li>&gt;&gt; Stabiliser-free – no risk of over-stabilisation, so ideal for indoor pools</li> <li>&gt;&gt; Fast dissolving and fast acting</li> <li>&gt;&gt; Extra strength. More economical and effective than standard calcium hypochlorite sanitisers</li> <li>&gt;&gt; Higher pH and calcium base simplifies balancing water in soft water areas</li> </ul>	<p><b>Where to dose</b></p> <p>With the circulation running, broadcast the Superfast Granules evenly over a wide area in the deepest part of the pool. If the water is cold or particularly shallow, it is advisable to pre-dissolve the product in a clean plastic bucket of warm water, and then dose as above.</p>
<p><b>SUPERCAPSULES</b></p> 	<p>Chlorine content (% av.Cl<sub>2</sub>)</p> <p><b>88</b> Calcium Hypochlorite</p>	<ul style="list-style-type: none"> <li>&gt;&gt; Kills water-borne bacteria and oxidises organic matter</li> <li>&gt;&gt; Stabiliser-free – no risk of over-stabilisation, so ideal for indoor pools</li> <li>&gt;&gt; Long lasting (typically five days) – so less time on routine maintenance</li> <li>&gt;&gt; Higher pH and calcium base simplifies balancing water in soft water areas</li> </ul>	<p>Skimmer</p>

**NOTE** Although you may choose to use a combination of stabilised and unstabilised chlorines in the same pool as part of your treatment strategy, extreme care must be taken not to mix these products, either in the dry state, or by dosing them together in the same skimmer or feeder device. **Never mix Standard Fi-Clor or Fi-Clor Premium 5 sanitisers with the Fi-Clor Superfast range (Granules, Shock or Superchlorinator) or Fi-Clor Supercapsules.**



4 >> POINT POOL CARE PLAN

# 2 >> REMOVE IMPURITIES

In addition to bacteria, algae and viruses, pool water also contains chloramines. Although not a direct health risk, they need to be broken down to maintain high quality water that's pleasant to bathe in. High chloramine levels are responsible for eye-sting and that unpleasant, stale chlorine smell associated with old-fashioned swimming baths. If chloramines are controlled, bathers in pools sanitised by Fi-Clor will only be aware of a faint, but reassuring trace of chlorine in the water, though in most cases the chlorine will be virtually undetectable.

## ▶ UNDERSTANDING CHLORAMINES

- Q. Where do chloramines come from?**  
**A.** They are formed when the free chlorine comes into contact with nitrogen containing waste such as sweat, soaps, cosmetics and even urine.
- Q. What is the difference between chloramines and combined chlorine?**  
**A.** The two terms are used interchangeably. Combined chlorine simply means that some of the free chlorine has been used up in combining with the nitrogen compounds.
- Q. Can you measure chloramine levels in a pool?**  
**A.** Yes. Carry out a test for Total Chlorine as described below. The rest is elementary arithmetic – total chlorine minus free chlorine equals combined chlorine.
- Q. Apart from bather discomfort, how do I know if chloramine levels are too high?**  
**A.** The free chlorine level should always be at least twice the level of combined chlorine, and combined chlorine should always be below 1 mg/l (ppm).
- Q. How do I get rid of chloramines?**  
**A.** Superchlorinate, i.e. raise the free available chlorine to 5 – 7mg/l (ppm).
- Q. Can I use standard Fi-Clor or Premium 5 Granules to superchlorinate?**  
**A.** This is not best practise as these products will unnecessarily add extra stabiliser to the pool. Our Fi-Clor Superchlorinator will be far more effective as it contains no stabiliser.
- Q. What if I want to use the pool straight after superchlorinating it? Won't the chlorine level be too high?**  
**A.** The level will invariably be too high. The best technique is to superchlorinate in the evening leaving chlorine levels to fall overnight.
- Q. How frequently should I superchlorinate?**  
**A.** Whenever chloramine levels are too high, and, in any case, at least once a fortnight.

**TEST METHOD** Drop a DPD No 3 tablet into the cell you used when you tested for free chlorine – the sample containing the pool water reacted with the DPD No 1 tablet. Allow to stand for 2 minutes, invert several times to mix thoroughly and then match the colour with the standard. This will give you the total chlorine. Subtract the free chlorine from the total chlorine to give you the combined chlorine level.



## ▶ USEFUL TIP

1. Keep a close check on chloramines when the pool is being heavily used. The more bathers, the greater chance of impurities being introduced.



4 >> POINT POOL CARE PLAN

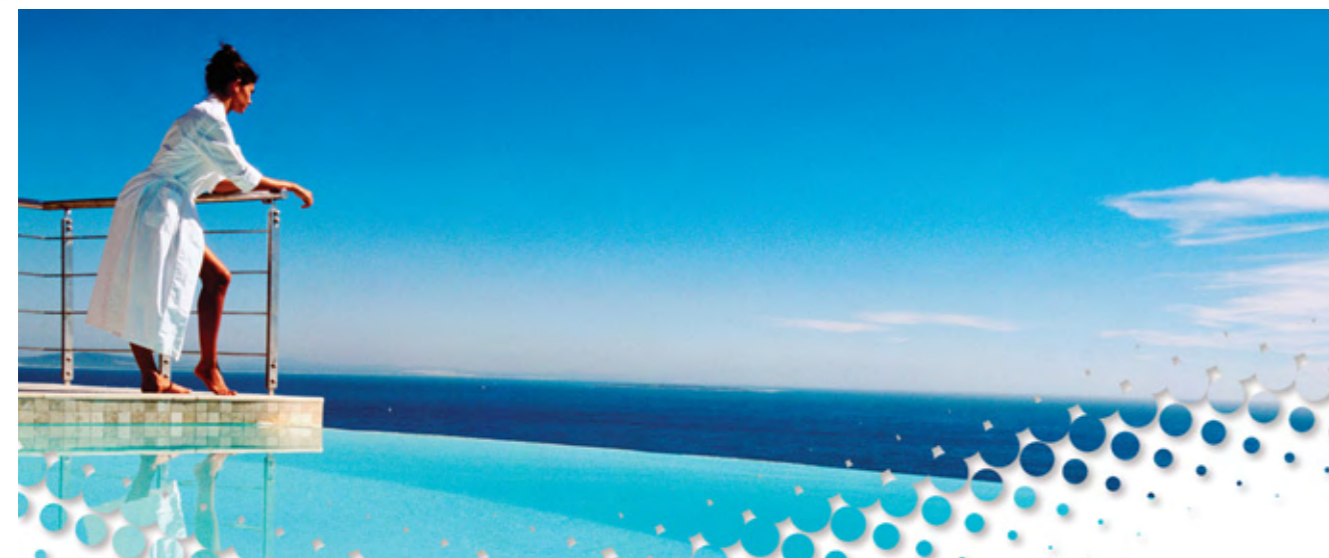


# 2 >> REMOVE IMPURITIES

## ▶ REMEDIAL ACTION

Once a fortnight, the pool should be superchlorinated using an unstabilised chlorine such as Fi-Clor Superchlorinator. However, depending on bathing load, it may be necessary to treat the pool more often to reduce high chloramines.

DOSE RATE	PER 11,000 GALLONS (50m <sup>3</sup> )	IN MY POOL
Fi-Clor Superchlorinator	Half the contents of a 1kg pack of Fi-Clor Superchlorinator, or the entire contents of the alternative 450g Superchlorinator pack.	
Fi-Clor Superfast Shock	1kg when required	
<b>SUPERCHLORINATOR</b> 	Chlorine content (% av.Cl <sub>2</sub> ) <b>78 Calcium Hypochlorite</b> >> Rapid dissolving, fast acting >> Breaks down pollutants that cause eye-sting and odour >> Kills water borne bacteria >> Stabiliser-free – no chlorine lock. Helps restore the effectiveness of the main sanitiser >> Use the day before a pool party for sparkling clear water	With the circulation running, broadcast the Superchlorinator evenly over a wide area in the deepest part of the pool
<b>SUPERFAST SHOCK</b> 	Chlorine content (% av.Cl <sub>2</sub> ) <b>78 Calcium Hypochlorite</b> >> Eliminates green or cloudy water >> Rapid dissolving, fast acting >> Kills algae & oxidises organic matter >> Breaks down pollutants that cause eye-sting and skin irritation >> Kills water borne bacteria >> Stabiliser-free – no chlorine lock. Helps restore the effectiveness of the main sanitiser	With the circulation running, broadcast the Superfast Shock evenly over a wide area in the deepest part of the pool



## ▶ USEFUL TIP

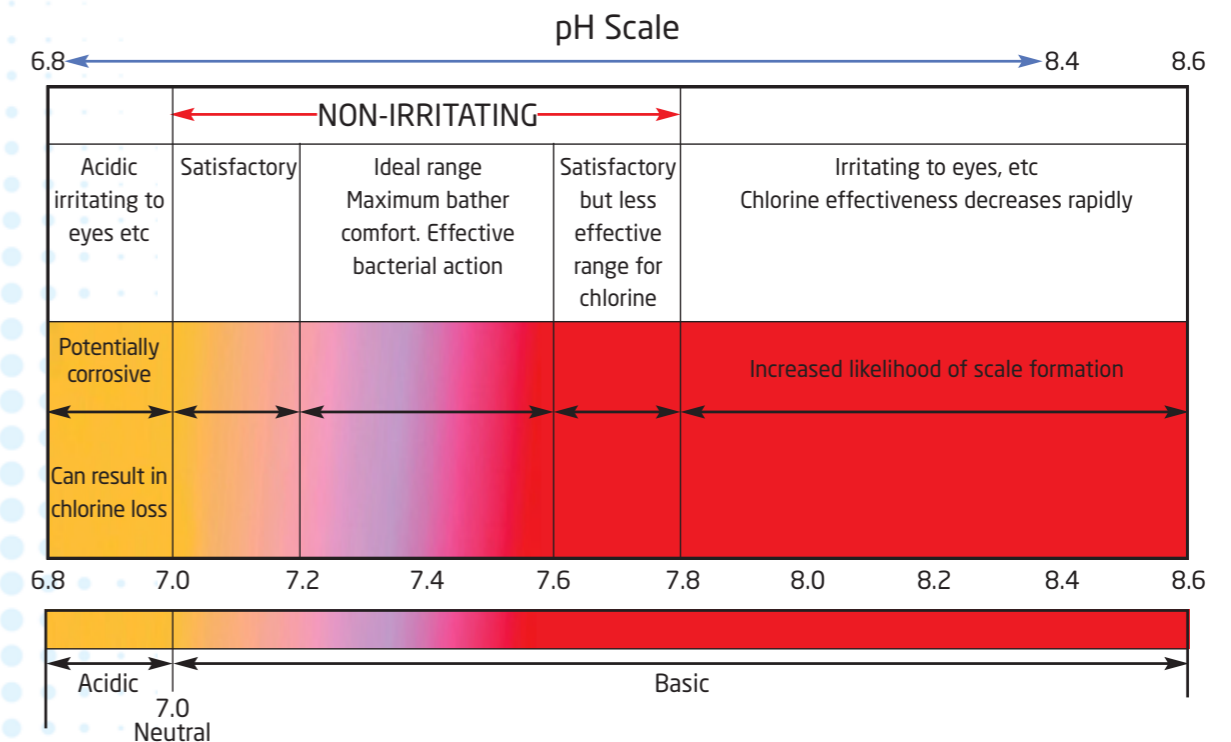
If the water is cold or particularly shallow, it is advisable to pre-dissolve the product in a clean plastic bucket of warm water and then dose as above.

# 3 >> BALANCE THE WATER

You should balance the water to help keep it crystal clear and protect both the pool and the circulation system from scale or corrosion. For water to be in balance, the pH, total alkalinity and calcium hardness should all be within recommended limits. We will take these in turn:

## ▶ UNDERSTANDING pH

Regulating pH is one of the most important aspects of pool care. Low pH can lead to skin irritation and corrosion of equipment. High pH can result in cloudy water and contribute to scale formation. More importantly, high pH will reduce the effectiveness of the sanitiser, chlorine based ones especially. The amount of free available chlorine released falls off quite rapidly with increasing pH.



### Q. What is pH?

A. It is a measure of how acid or how alkaline (basic) the water is. The word 'basic' is sometimes used as an alternative to alkaline in the context of high pH. For example, lemons and cooking apples are sour and acidic and have a low pH. Soda crystals and bicarbonate of soda are alkaline and have a high pH.

### Q. What are the yardsticks?

A. pH is measured on a scale of 0 (very acidic) to 14 (extremely alkaline). A reading of 7.0 is neutral.

### Q. What should the pH of the pool water be?

A. Between 7.2 and 7.6, but keep it as near as possible to 7.2 if you are using Fi-Clor Superfast Granules or Supercapsules. This is a compromise as the chlorine would be more effective if the pH was below 7.0, but this would lead to potentially corrosive conditions. Also, the human body is most comfortable bathing in water with a pH of approx. 7.4.

### Q. Is accuracy important when measuring pH?

A. Yes – you should bear in mind that the pH scale is not a linear one. It is in fact logarithmic with pH 8.0 being ten times more alkaline than pH 7.0, and

pH 9.0 one hundred times more alkaline than pH 7.0. So small differences are worthy of attention.

### Q. What effects the pH of the pool water?

A. In some water areas, especially in the south of England, the water is hard because it contains dissolved calcium (and magnesium) salts which it has picked by flowing through chalk strata. It also tends to have a naturally high pH and alkalinity.

### Q. How often should I check the pH?

A. Preferably daily - but at least once a week.

## TEST METHOD

Dissolve a phenol red tablet in the pool water sample and take the reading by matching the colour of the sample with the colour on the comparator.

## ▶ USEFUL TIPS

- In hard water areas it should be easier to keep pH within recommended limits by using Fi-Clor Premium 5, Maxi or Mini Tablets rather than granules. The tablets are slightly acidic in normal bathing concentrations and therefore tend to balance the higher levels of pH and alkalinity associated with hard water.
- When correcting out of balance water, always adjust the alkalinity first. This will make pH correction easier.





# 3 >> BALANCE THE WATER

## ▶ REMEDIAL ACTION

If the pH is below 7.2, add Fi-Clor pH Increaser (Soda Ash).  
 If the pH is above 7.6, add Fi-Clor pH & Alkalinity Reducer (Dry Acid).

DOSE RATE	PER 11,000 GALLONS (50m <sup>3</sup> )	IN MY POOL
Fi-Clor pH Increaser	500g per day until the pH is correct	
Fi-Clor pH & Alkalinity Reducer	500g per day until the pH is correct	

pH INCREASER		
	<b>SODA ASH</b>	<p><b>pH +</b></p> <p>&gt;&gt; Corrects low pH</p> <p>Pre-dissolve in clean plastic bucket of pool water and with the circulation running, distribute evenly around the pool avoiding the skimmers</p>
	<b>DRY ACID</b>	<p><b>pH -</b></p> <p>&gt;&gt; Corrects high pH and high Alkalinity</p> <p>Pre-dissolve in clean plastic bucket of pool water and with the circulation running, distribute evenly around the pool avoiding the skimmers (Do not pour it in one spot or some alkalinity may be destroyed)</p>



# 3 >> BALANCE THE WATER

## ▶ UNDERSTANDING TOTAL ALKALINITY

Total alkalinity is also an important parameter that needs to be taken into account in optimising water conditions.

**Q. What is total alkalinity?**

**A.** Total alkalinity is a measure of the amount of alkali (or in chemical terms, bicarbonates, carbonates and hydroxides) in the water.

**Q. How is it different from pH?**

**A.** The two are closely inter-related. pH is a scale measuring whether the water is acidic or alkaline (it is in fact a logarithmic scale measuring the hydrogen ion concentration - see page 10). Total alkalinity quantifies how much alkali (mainly bicarbonates) there is in the water and this is measured in the usual mg/l (ppm) units.

**Q. What is the correct amount of total alkalinity?**

**A.** The total alkalinity should be between 100 and 150mg/l (ppm), or between 80 - 120mg/l (ppm) for pools sanitised with Fi-Clor Superfast Granules or Fi-Clor Supercapsules.

**Q. Why is total alkalinity important?**

**A.** It has a big influence on how easy or difficult it can be to control pH. Low alkalinity can lead to rapid fluctuations of pH; high alkalinity makes it difficult to adjust (reduce) the pH - that's what they mean when they say the water is over 'buffered'.

**Q. What else can happen if total alkalinity is outside the recommended range?**

**A.** Low alkalinity may lead to low pH, which could cause corrosion and damage to the pool. Total alkalinity above 200mg/l (ppm) may cause cloudy water or scale formation, especially if the pH is high as well.

**Q. How often should I test for Total alkalinity?**


**A.** At least once a month.

## ▶ REMEDIAL ACTION

If the total alkalinity is below the recommended lower limit for the sanitiser you are using, add Fi-Clor Alkalinity Increaser (Bicarbonate).

DOSE RATE	PER 11,000 GALLONS (50m <sup>3</sup> )	IN MY POOL
Fi-Clor Alkalinity Increaser	1.5kg per day until the total alkalinity is above 80-150mg/l (ppm)	g per day until the total alkalinity is between 80-150mg/l (ppm)

ALKALINITY INCREASER		
	<b>BICARBONATE</b>	<p><b>TA +</b></p> <p>&gt;&gt; Corrects low Total Alkalinity</p> <p>Pre-dissolve in clean plastic bucket of pool water and with the circulation running, distribute evenly around the pool avoiding the skimmers</p>

### TEST METHOD

There are various test methods, depending on the type of test kit, but a well established, yet simple way of measuring total alkalinity is to take a 100ml pool water sample in a stoppered bottle. Add one Alkalinity M tablet. Shake to disintegrate. Continue adding tablets one at a time until colour changes from yellow to bright pink.  
 Alkalinity = (No of tablets x 40) - 20mg/l (ppm).

## ▶ REMEDIAL ACTION

If the total alkalinity is above the recommended upper limit for the sanitiser you are using, add Fi-Clor pH & Alkalinity Reducer (Dry Acid).

DOSE RATE	PER 11,000 GALLONS (50m <sup>3</sup> )	IN MY POOL
Fi-Clor pH & Alkalinity Reducer (Dry Acid)	1kg per day until the total alkalinity is at the required level	g per day until the total alkalinity is at the required level

### NOTE

For best results, dissolve in a clean plastic bucket and with the circulation running, pour the solution in a small area at the deep end of the pool. **Note that this technique is different to that for lowering pH.**



## ▶ UNDERSTANDING CALCIUM HARDNESS

It's wise to keep an eye on calcium hardness, which can lead to problems on pool surfaces or in the circulation system if it is too high or too low.



**Q. What is total calcium hardness?**

**A.** It is a measure of the amount of dissolved calcium and magnesium in the pool water. If there is a calcium deposit on the bottom or the sides of your pool, it is no longer dissolved.

**Q. Why is it important?**

**A.** It is an important factor in balancing your pool water.

**Q. What happens if the calcium hardness levels are too low?**

**A.** Water is sometimes described as being calcium hungry - if there is not enough (dissolved) calcium in the water it will try to take it from grouting, and in fact from any cementitious material in the pool (non liner pools). See photograph above.

**Q. What happens if calcium levels are too high?**

**A.** Under certain conditions (high pH and/or high alkalinity), the calcium can come out of solution, producing cloudy water and scale formation on pool surfaces, pipes and fittings. A similar phenomenon occurs during the formation of stalagmites and stalactites.

**Q. Are high calcium levels a real worry?**

**A.** They are not now thought to be a major concern unless there are also high levels of pH and total alkalinity, and the pool is run at a high temperature.

**Q. What is the correct level of calcium hardness?**

**A.** The calcium hardness should be above 175mg/l (ppm) for liner pools and above 250mg/l (ppm) for tiled pools, with the upper limit in both cases being 1,000mg/l (ppm).

**Q. How often should I test for total hardness?**

**A.** Test 2 or 3 times a season.

**TEST METHOD** Depending on the type of test kit you have, a straightforward way of measuring calcium hardness is to take a 100ml pool water sample in a stoppered bottle. Add one Calcium Hardness tablet. Shake to disintegrate. Continue adding tablets one at a time until colour changes from pink to bright violet.  
Hardness = (No of tablets x 20) - 10mg/l (ppm).

## ▶ REMEDIAL ACTION

If the calcium hardness is below 175mg/l (ppm), add Fi-Clor Hardness Increaser (Calcium Chloride Flake).

DOSE RATE	PER 11,000 GALLONS (50m³)	IN MY POOL
Fi-Clor Hardness Increaser	1 kg per day until the calcium hardness is above 175mg/l (ppm)	g per day until the calcium hardness is above 175mg/l (ppm)
<b>HARDNESS INCREASER</b>	» Corrects low Calcium Hardness	With the circulation running, sprinkle the product directly into the water around the perimeter of the pool. <b>Do not pre-dissolve</b> as this could generate excessive heat. Only use when bathing has ceased and avoid areas near the skimmers.
<b>CALCIUM CHLORIDE FLAKE</b>		



## ▶ BALANCING THE WATER - SUMMARY

Handbooks and presentations drive home the importance of 'water balance', and in essence what they mean by this is keeping pH, total alkalinity and calcium hardness within the parameters recommended. This is to ensure that the water is neither corrosive, nor scale forming to an unacceptable extent. There is, however, a bit more to it.

**Q. Is there any further way of finding out if the water is in balance?**

**A.** Yes. There is a calculation you can do based on an empirical formula which gives you the Langelier Index, sometimes also called the Saturation Index.

**Q. What gets taken into account in the formula?**

**A.** Five factors based on the readings for pH, total alkalinity, calcium hardness, pool water temperature and total dissolved solids (sometimes abbreviated TDS).

**Q. What are total dissolved solids (TDS)?**

**A.** In pure chemical terms, TDS is the total solids remaining after evaporating away all the water, but in pool water terminology it represents the dissolved solids that can be measured with a conductivity meter - mainly chlorides and sulphates. These ionic species increase the ability of the water to conduct electric current, thereby increasing the risk of corrosion to metalwork.

**Q. How do I measure TDS?**

**A.** It needs a special probe which measures

the conductivity of the water. It's hardly worth buying one as TDS only needs to be checked about once a season. It is best to take a water sample to your pool shop

**Q. Can I get my pool water balance checked?**

**A.** Take a 500ml pool water sample to your nearest Recommended Fi-Clor Water Test Centre. This will be tested using our Fi-Clor WaterLink photometer and the data analysed by the Fi-Clor WaterChemist computer software.



## ▶ USEFUL TIPS

1. Backwash the filter and top up with fresh water regularly (at least fortnightly, but more frequently depending on bathing load). This will not only ensure effective filtration, but also keep water replacement at a level which will help control the build-up of calcium hardness and total dissolved solids. It will also help control the level of cyanuric acid (stabiliser).
2. Find your nearest Recommended Fi-Clor Dealer on [www.fi-clor.co.uk](http://www.fi-clor.co.uk). They will be able to check your water balance for you.



## ► PREVENTION OF POOL WATER PROBLEMS

There are other things you can do to get the best out of the chemicals you use to sanitise the pool and to keep the water clear, blue and inviting. For outdoor pools, it makes sense to ensure the water is stabilised to prolong the active life of the chlorine. Also, periodic use of water clarifiers and algicides will help keep the water in tip-top condition.

## ► UNDERSTANDING STABILISERS

Free available chlorine is used up in purifying the pool water, but it can also be lost in outdoor pools through attack by the ultra-violet rays of sunlight. This plays no part in the water treatment process and is entirely wasteful.

It can be prevented by having the right amount of stabiliser (sometimes misleadingly called conditioner) in the water. Tests have shown that in water that has not been stabilised, chlorine dosed into the pool first thing can be broken down by sunlight and lost before noon, leaving harmful organisms and algae an opportunity to breed.

This could happen if you are sanitising an outdoor pool with Fi-Clor Superfast Granules or Supercapsules and you will need to add stabiliser to prevent decomposition of chlorine by sunlight.

Fortunately, standard Fi-Clor Granules & Tablets and Premium 5 Granules & Tablets come with their own built in stabiliser, and unless you are starting the season with completely fresh mains water, little or no further action will be required.

However, too much stabiliser is also a bad thing so it is best to check stabiliser levels from time to time to make sure you have enough to protect the chlorine, but not an excessive amount.



### Q. What is stabiliser?

**A.** Its chemical name is cyanuric acid. With standard Fi-Clor Granules & Tablets and Premium 5 Granules & Tablets, we attach atoms of chlorine to cyanuric acid to present you with chlorine in a solid form that is safe to handle. That's why we say it has its own in-built stabiliser.

### Q. Do all chlorines contain stabiliser?

**A.** No. Superfast Granules and Supercapsules have no cyanuric acid in them. If you are using these products to sanitise an outdoor pool, you could save money by adding Fi-Clor Chlorine Stabiliser to the water.

### Q. How much stabiliser do I need to protect the chlorine in my pool?

**A.** About 30mg/l (ppm). If you are a regular user of Fi-Clor or Premium 5 Granules or Tablets, there will almost certainly be enough stabiliser in the water without the need for further

additions of Fi-Clor Chlorine Stabiliser.

### Q. Why is too much stabiliser a bad thing?

**A.** It slows down the time it takes the chlorine to kill bugs, germs and algae. To compensate for this, you will need to run your pool at higher levels of free chlorine. If cyanuric acid is 160 ppm, you should let free chlorine go no lower than 2.5 mg/l (ppm) at all times.

### Q. How high is too high?

**A.** Opinions vary among experts, but most would agree that the effectiveness of the chlorine can be impaired at levels in excess of 100mg/l (ppm) and in fact current thinking is that the optimum level is 30-60mg/l (ppm). Certainly, you should allow it to go no higher than 200mg/l (ppm) which is the industry recommended maximum limit.

### Q. What is 'chlorine lock'?

**A.** It is a term loosely used to denote the fact that the stabiliser is at a level where it is reducing the effectiveness of the chlorine. It is misleading in that it implies that the chlorine is entirely locked up and inactive. This is not in fact the case, as the chlorine's activity has only been reduced below a level where it is practically effective.

### Q. How can I reduce the cyanuric acid level in my pool?

**A.** There is no chemical way of doing this. The only practical way to reduce stabiliser levels is to partially drain the pool and top up with fresh water. Do this in stages so as to avoid putting a strain on the structure of the pool.

### Q. How often should I test for cyanuric acid?

**A.** At least once a month during the swimming season (consult your pool dealer if in doubt).


## ► USEFUL TIP

Good pool care requires regular (i.e. at least fortnightly) backwashing of the filter during periods of normal summer use. During backwashing, water from the pool is passed upwards through a sand filter so that the accumulated debris can be removed from the filter media and drained to waste. The pool is then topped up with fresh water. Not only will regular backwashing keep the filter in good condition, it will also dilute the pool water and help control TDS and cyanuric acid. You get benefits all round.

**TEST METHOD** Methods vary, but an inexpensive test requires a 'disappearing dot' cyanuric acid test kit. Fill the cell with a 10ml pool water sample. Add one cyanuric acid test tablet: crush to dissolve and shake to disperse. Push the plunger into the sample until the dot on the bottom of the plunger is just obscured from view by the turbidity in the sample. Read the result from the scale on the side of the plunger. Dilute the sample with tap water if the stabiliser level is above 100mg/l (ppm) and multiply the reading by the rate of dilution.

## ► DOSING OF CHLORINE STABILISER

It is now considered detrimental to add additional cyanuric acid stabiliser to pools disinfected with stabilised chlorine donors such as standard Fi-Clor Granules, Premium 5 Granules, Fi-Clor Tablets and Premium 5 Tablets, even at start up with a fresh fill of water, as the cyanuric acid level will quite quickly rise to the optimum level. Therefore, only add additional stabiliser when using unstabilised chlorine donors such as Fi-Clor Superfast Granules and Supercapsules.

DOSE RATE	PER 11,000 GALLONS (50m <sup>3</sup> )	IN MY POOL
Fi-Clor Chlorine Stabiliser	50g will raise the stabiliser level by 1 mg/l (ppm)	g will raise the stabiliser level by 1 mg/l (ppm)
<b>CHLORINE STABILISER</b>	<b>CYANURIC ACID</b>	<ul style="list-style-type: none"> <li>» Raises stabiliser levels</li> <li>» Prevents loss of chlorine to sunlight</li> <li>» Reduces wastage of chlorine</li> <li>» Essential for outdoor pools</li> </ul>
		



## NOTE

If the cyanuric acid is above 100mg/l (ppm): The only practical way to lower cyanuric acid is to partially drain your pool and then replace it with fresh water. Retest the pool and continue partial water replacement if necessary.



# 4 » PREVENTION OR CURE

## ▶ KEEPING THE POOL WATER BLUE AND CLEAR

The guidelines so far should ensure that the water does not pose a health risk to bathers and/or present a long-term threat to the fabric of the pool. But nothing creates a better impression than having a pool with water that is blue, crystal clear and with a sparkle on the surface. If algae gets into the pool, or if there are tiny suspended particles in the water, it can spoil the appearance and in extreme cases even stop you using the pool. The best way to prevent this happening is by occasional use of specially developed chemicals such as algicides and water clarifiers.

## ▶ PREVENTING ALGAE

### Q. What are algae?

A. Algae are microscopic plants that grow in water. There are many different strains and they are usually green, but you can find blue-green, black or mustard algae. They can grow on a pool surface (a colony) or float in the water (a suspension). A suspension can turn pool water completely green and this can literally happen overnight if you are unlucky.

### Q. Won't chlorine kill algae?

A. Yes, usually. But there are occasions when chlorine levels are too low, or the chlorine is not acting effectively because the water is out of balance or there are very high levels of stabiliser. There are

also some strains of algae that are resistant to chlorine.

### Q. What can I do to prevent algae?

A. Firstly, ensure that there is adequate chlorine in the pool at all times, even when the pool is not in use. Secondly, use a long life algicide when you open the pool up, and if necessary also during the swimming season. (An algicide is a chemical that kills algae). The ones we recommend are our Fi-Clor Long Life Multi-functional Algicide (copper free) and Fi-Clor Long Life Extra Strong algicide (copper based). Please consult your Fi-Clor dealer or stockist for advice on the best product to use.

### Q. What about your Premium 5 Granules and Tablets? Don't they contain an algicide anyway?


A. Yes, using Premium 5 sanitisers will go a long way to help. But to give them a sporting chance, it is best to start off with a boost dose of Long Life Algicide. This slowly releases its active ingredients over a period of time. The algicide in the Premium 5 Granules and Tablets will be more effective if it is used to replenish the active ingredients from the Long Life Algicide.

### Q. What if the pool has already turned green with algae?


A. For guidelines on killing algae, see page 21.

DOSE RATE	PER 11,000 GALLONS (50m <sup>3</sup> )	IN MY POOL
Fi-Clor Long Life Multi-Functional Algicide	1.5 litres every 6 months	
Fi-Clor Long Life Extra Strong Algicide	0.5 litres every 3 months	

MULTI-FUNCTIONAL ALGICIDE	COPPER-FREE LONG LIFE FORMULA	
	<ul style="list-style-type: none"> <li>» Eliminates algae</li> <li>» Long life protection for the season</li> <li>» Clarifies pool water</li> <li>» Helps prevent staining and scaling of pool surfaces</li> </ul>	Distribute evenly around the pool

EXTRA STRONG ALGICIDE	COPPER BASED LONG LIFE FORMULA	
	<ul style="list-style-type: none"> <li>» Destroys all types of typical algae, even the most resistant</li> <li>» Highly concentrated composition</li> <li>» Contains copper</li> </ul>	Distribute evenly around the pool in the evening after bathing has finished. N.B. Adding sufficient product in one dose to provide 6 months protection could raise the copper concentration to an unacceptable level, depending on the existing copper level before dosing the algicide

# 4 » PREVENTION OR CURE

## ▶ VACUUMING

### Q. Isn't the filter supposed to keep the water clear?

A. The filter will take out most of the larger particles in suspension in the pool water. But water can become cloudy because minute, colloidal particles are so small that they can pass through a filter without being trapped. For instance, hardness salts can change from being in solution into very fine solid particles if the pH or total alkalinity are too high. Or dead algae may be broken down into a fine powdery residue. The filter alone cannot cope with these.

### Q. What can you use to take out these fine particles?

A. You can use a water clarifier. You will often find them referred to as flocculants or coagulants. On the Fi-Clor range you have the choice of using our Fi-Clor Rapid Clarifier (a liquid that can be dosed directly into the pool) or Fi-Clor Clarifier Tablets (which go in the skimmer). Fi-Clor Rapid Clarifier is especially recommended after shock dosing to kill algae – a double

dose may be beneficial in removing large amounts of suspended matter (dead algae cells).

### Q. How do coagulants work?

A. Suspended particles in the water are held apart because they all contain a negative electrical charge (remember like repels like). With a coagulant, you introduce a molecule carrying a number of positive charges. These molecules attract the negatively charged fine particles in the water. They are clumped together into a large enough size to be trapped by the filter.

### Q. Are there any other benefits in using a coagulant?

A. Yes. Fine particles in the water can present breeding sites for bacteria and algae. This creates an additional demand for chlorine. Remove the particles, and you should save on chlorine.


### Q. What else will a water clarifier do?

A. Good water clarifiers give an attractive sparkle to the surface of the water.




DOSE RATE	PER 11,000 GALLONS (50m <sup>3</sup> )	IN MY POOL
Fi-Clor Rapid Clarifier	For remedial treatment (if you already have a clarity problem), pour 200ml of Fi-Clor Rapid Clarifier into the pool near one of the inlets	
Fi-Clor Clarifier Tablets	Add 1 mini sachet into the skimmer. Make sure there are no other chemicals present in the skimmer	

RAPID CLARIFIER	POLYQUAT	
	<ul style="list-style-type: none"> <li>» Maintains crystal clear water</li> <li>» Powerful formula</li> <li>» Improves efficiency of sand filtration</li> <li>» Not suitable for diatomite filtration systems</li> <li>» Used with filter running</li> </ul>	To maintain pool water clarity, use 100ml of Rapid Clarifier once a week, or after each backwash

CLARIFIER TABLETS	ALUMINIUM SULPHATE	
	<ul style="list-style-type: none"> <li>» Clarifies pool water</li> <li>» Suitable for all types of sand filtration</li> <li>» Compatible with all pool sanitisers</li> <li>» Improves efficiency of sand filtration</li> </ul>	Add one mini-sachet of Fi-Clor Clarifier Tablets into the skimmer (or into the pump strainer box)



# 4 » PREVENTION OR CURE

## ► CLEANING YOUR POOL

During the swimming season, you should clean your pool thoroughly at least once a week. A thorough cleaning includes leaf skimming, brushing, vacuuming, cleaning the skimmers and checking the circulation system and the filter.

To keep your pool as clean as possible:

» COVER YOUR POOL WHEN NOT IN USE.



PHOTO COURTESY CHESTNUT INTERNATIONAL LTD



» HAVE SWIMMERS SHOWER BEFORE ENTERING YOUR POOL.



» SHOCK TREAT FORTNIGHTLY.

## ► BRUSHING

### PURPOSE

Regular brushing of pool walls and bottom prevents the unwanted build up of dirt, dust, leaves and dead insects. This debris can cause stains on your pool surface.

### METHOD

You should use a brush to remove loose dirt, dust and soil that has collected on the sides and bottom of your pool. Direct the collected dirt to the main drain so that it can be caught by recirculating currents or easily vacuumed. If your pool does not have a main drain, you should vacuum immediately after brushing. Concrete pools require a stiffer bristle than do vinyl-lined pools.

## ► LEAF SKIMMING

### PURPOSE

Leaf skimming removes debris before it sinks to the bottom of your pool. Debris becomes much more difficult to remove and can also cause a stain if it reaches the bottom of the pool.

### METHOD

Use a long-handled leaf skimmer to remove leaves, insects, and any other debris floating on the pool surface.



# 4 » PREVENTION OR CURE

## ► VACUUMING

### PURPOSE

A weekly vacuuming is essential for keeping your pool consistently clean and maintaining sparkling clear pool water. Vacuuming removes particles in the water. Particles that are left at the bottom of the pool can cause staining.

### METHOD

If your vacuum attaches to the skimmer or to a designated vacuum point, be sure not to allow any air into the hose. In order to do this, submerge the vacuum head and hose underwater before connecting it.

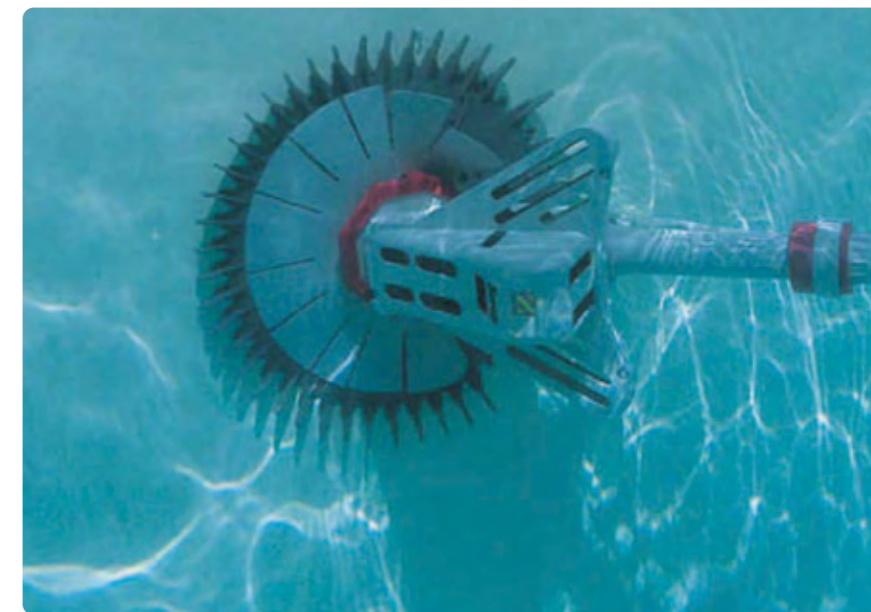


PHOTO COURTESY CHESTNUT INTERNATIONAL LTD

## ► CLEANING OFF TIDE MARKS

### PURPOSE

Cleaning oily deposits along the water line (often due to the use of sun screen or body lotions) not only improves the appearance of the pool, but perhaps more importantly removes potential breeding sites for micro-organisms.

### METHOD

Be sure to use **Fi-Clor Tile & Liner Cleaner** which is compatible with chlorine. Some detergent-based preparations can react with chlorine and cause eye and skin irritation. Simply squeeze some of the Fi-Clor Tile & Liner Cleaner gel onto a cloth or sponge and wipe over the affected area.



### TILE & LINER CLEANER



### ADVANTAGES

- » Removes dirt and scale from the water line
- » Gel based formulation; very effective on vertical surfaces

### APPLICATION

Squeeze some Tile & Liner Cleaner gel onto a cloth or sponge, wipe over the affected area and rinse off



## ▶ GREEN WATER/ALGAE ON POOL SURFACES

**Q. Why did my pool go green?**

**A.** At some stage, chlorine levels have fallen, or chlorine has become ineffective, allowing algae to become established in the water.

**Q. How do you get rid of algae?**

**A.** Follow these easy steps:

1. Adjust the pH to as near 7.2 as possible.
2. Shock dose the pool with an unstabilised chlorine such as **Fi-Clor Superfast Shock**.<sup>\*</sup> Shock dosing kills the algae and usually produces the fastest results. The dose rate for Fi-Clor Superfast Shock is 1kg per 11,000 gallons (50m<sup>3</sup>) of pool water.
3. Brush off any algae that may remain on pool surfaces. Look for colonies behind step ladders and around underwater lighting. If you have a concrete pool, use a stainless steel brush. If you have a liner pool, use a soft nylon brush.

**\*WARNING:** Do not mix Fi-Clor Superfast products with any other types of chlorinating compounds (even other products in the Fi-Clor range) either in the dry state, or in the skimmer. If using with other products, dose them into the pool separately.

4. Run the filter for 24 hours then backwash to remove dead algae from the top of the filter media.

5. Vacuum the pool.

6. Any remaining haziness in the water should be removed by applying a remedial dose of **Fi-Clor Rapid Clarifier**. If this is insufficient to clear the pool, carry out a total floc using **Fi-Clor Granular Floc** or **Fi-Clor Liquid Floc**.

7. Thereafter maintain chlorine at around 2.0 – 4.0mg/l (ppm) for stabilised chlorine products such as standard Fi-Clor and Premium 5, and 1.0 – 3.0mg/l (ppm) for unstabilised chlorine products such as Superfast Granules.

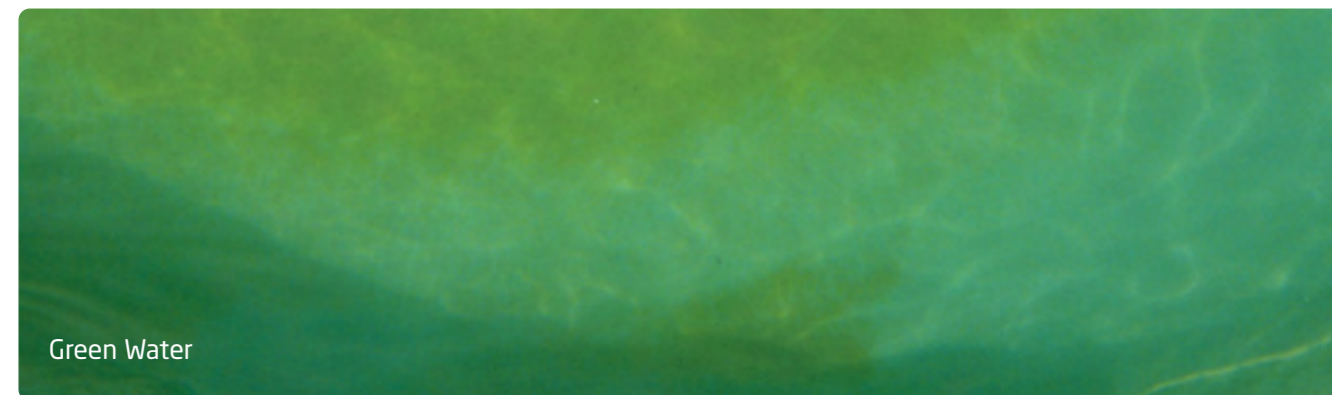
8. Finally, to prevent a recurrence, dose with **Fi-Clor Long Life Extra Strong Algicide** (copper based), or if copper levels are already high with **Fi-Clor Long Life Multi-Functional Algicide** (copper free). Consult

your Fi-Clor dealer or stockist for advice if you are uncertain which product to use.

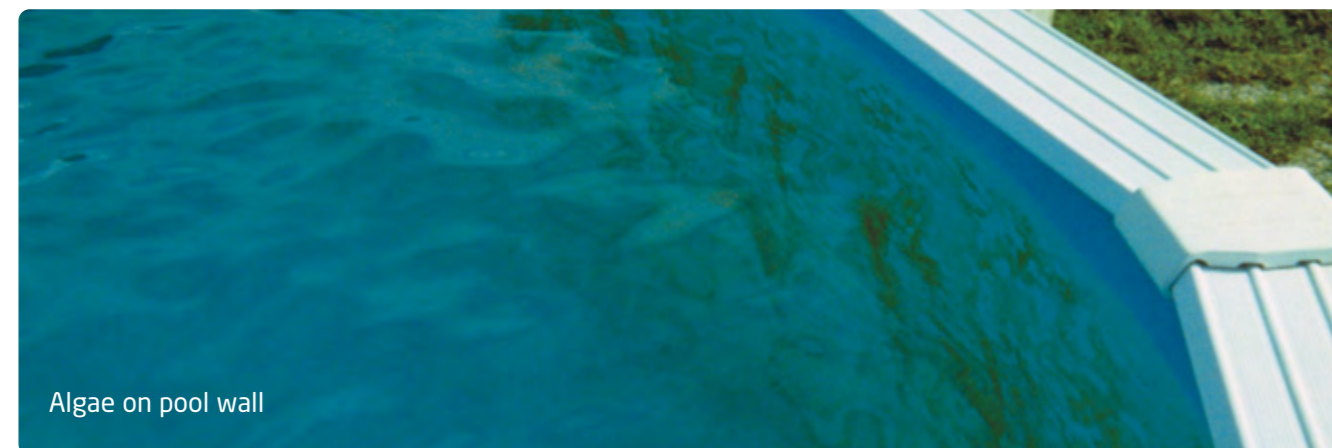
**Q. What can I do if the algae keeps coming back?**

**A.** The recommended procedure is:

1. Lower the pH to as near 7.2 as possible.
2. Superchlorinate the pool at least once a fortnight using **Fi-Clor Superchlorinator**. The dose should be sufficient to raise the free available chlorine to between 5 – 7mg/l (ppm) in a pool of 11,000 Gallons (50m<sup>3</sup>).
3. Apply another dose of **Fi-Clor Long Life Extra Strong Algicide** (copper based), or **Fi-Clor Long Life Multi-Functional Algicide** (copper free) if some time has elapsed since the last application.
4. There may be high levels of phosphate and/or nitrate present. If this is suspected, ask your dealer to test a pool water sample.
5. Ensure that adequate levels of chlorine and algicide are maintained at all times.



Green Water



Algae on pool wall

## ▶ STAINS

**Q. What causes stains?**

**A.** Stains can be caused by debris that has fallen to the bottom of the pool or by dissolved metals. When pool water pH, calcium hardness or total alkalinity levels are consistently low, dissolved metals may leave deposits on the pool surface.

**Q. What should I do if I see a stain?**

**A.** Treat the stain immediately to remove.


If the stain is accessible (above the water line), use **Fi-Clor Stain & Scale Remover**<sup>\*</sup> neat, or diluted at a rate of 1 litre to 30 litres of water, depending on the severity of the stain to be removed.

**Q. What happens if you don't treat stains immediately?**

**A.** An untreated stain may become a permanent stain.

**Q. How can you prevent staining?**

**A.** Keep your water balanced (see p14). In addition, regular use of **Fi-Clor Stain & Scale Inhibitor** will help prevent staining. The dose rate is 1kg per 11,000 gallons (50m<sup>3</sup>) but if levels of dissolved metals exceed 1.5mg/l (ppm), double the dose. Use of this product may assist in the slow removal of existing stains below the water line.

STAIN & SCALE REMOVER	ADVANTAGES	APPLICATION
	<ul style="list-style-type: none"> <li>» Removes staining and scaling from pool surfaces</li> <li>» Effective on all types of pool surface</li> <li>» No unpleasant odour</li> </ul>	<p>Use neat or diluted at a rate of 1 litre to 30 litres of water depending on the severity of the stain</p> <p>Brush or wipe on, rinse off</p>

**\*WARNING:** Wear gloves and protective eyewear when using Fi-Clor Stain & Scale Remover as it is a strongly acidic product.

## ▶ SCALE

**Q. What is scale?**

**A.** Scale is a white, grey or brownish deposit commonly found on metal surfaces and pool walls.

**Q. What causes scale?**

**A.** Scale can be caused by a combination of the following pool water conditions:

1. Total alkalinity above 150mg/l (ppm).
2. pH above 7.6.
3. Very high calcium levels, normally

above 1,000mg/l (ppm).


**Q. What should you do if your pool has scale?**

**A.** Use a reliable test kit. If the affected area is accessible (above the water line), use **Fi-Clor Stain & Scale Remover**<sup>\*</sup> neat or diluted at a rate of 1 litre to 30 litres of water depending on the severity of the scaling to be removed.

**Q. How can you prevent scale?**

**A.** Maintain total alkalinity, pH and calcium hardness at the following levels to keep your water balanced:

1. pH: 7.2 – 7.6.
2. Total alkalinity: 80 – 150mg/l (ppm), depending on sanitiser.
3. Calcium hardness: 175 – 1,000mg/l (ppm), depending on sanitiser.
4. Use **Fi-Clor Stain & Scale Inhibitor**.

STAIN & SCALE INHIBITOR	ADVANTAGES	APPLICATION
	<ul style="list-style-type: none"> <li>» Helps prevent stains and scale</li> <li>» Phosphate-free, minimises risk of algae</li> </ul>	<p>1kg per 11,000 gallons (50m<sup>3</sup>). Double dose for metals in excess of 1.5mg/l (ppm)</p> <p>Dose directly into the pool near the inlet</p>

## ▶ USEFUL TIP

Ask your recommended Fi-Clor Water Test Centre to do a water balance test for you.



## ▶ EYE AND SKIN IRRITATION

### Q. What causes eye irritation?

A. There are two possible causes – use your test kit to see which is the most probable.

1. It could well be a pH problem – the water could be too acidic or too alkaline. The pH of the human eye is around 7.4 - 7.5. Anything significantly higher or lower will irritate.

2. Alternatively, it could be due to high combined chlorine (chloramines), which are known to be lachrymatory (see section on chloramines, page 8).

Also, if you get an unpleasant chlorine

smell, it's odds on that the problem is due to high chloramines.

### Q. What can I do to the pool water if eye irritation occurs?

A. Depending on the results of your tests:

1. If it is a pH problem, correct the pH as necessary.

»To lower the pH, add **Fi-Clor pH & Alkalinity Reducer** once a day at a rate of 500g per 11,000 gallons (50m<sup>3</sup>) until correct reading is obtained.

»To raise pH, dose at the same rate with **Fi-Clor pH Increaser**.

2. If combined chlorine is too high:

»Break the chloramines down by superchlorinating the pool with **Fi-Clor Superchlorinator** to temporarily raise the free chlorine. In a pool of 11,000 Gallons (50m<sup>3</sup>) use sufficient **Fi-Clor Superchlorinator** to raise the free available chlorine to between 5 – 7mg/l (ppm), preferably last thing at night so that chlorine levels can fall naturally before bathing resumes. The ratio of free chlorine to combined chlorine should be 2:1 or better.



## ▶ DISCOLOURED WATER

### Q. What causes discoloured water?

A. Excess minerals (such as copper, iron and manganese) cause discoloured water. Copper makes the water blue/green, iron a brown rust colour and manganese a purple/black colour.

### Q. How do these minerals get into the water?

A. A variety of causes – for instance over-use of a copper-based algicide, corrosion of metal parts in the circulation system because of low pH, or filling the pool from spring or well water.

### Q. What can be done to remove minerals from pool water?

A.

1. Test the pH and adjust to 7.2 – 7.6 (see pages 10 – 11).

2. Shock dose the pool to a level of around 10mg/l (ppm) with **Fi-Clor Superfast Shock**. The dose for a pool of 11,000 gallons (50m<sup>3</sup>) will be 650g.

3. Filter continuously until the water is clear. A dose of **Fi-Clor Rapid Clarifier** water clarifier will help with this.

4. Shock dose again if the problem persists.

5. The addition of a sequestrant such as **Fi-Clor Stain & Scale Inhibitor** will help remove minerals by taking them into a chemical complex, thus rendering them inactive. For high levels of dissolved minerals, dose at the rate of 1 kg per 11,000 gallons (50m<sup>3</sup>).

If the water is discoloured because of algae growth, follow the method described in the algae section (see page 21).

## ▶ CLOUDY WATER

### Q. What causes cloudy water?

A. Cloudy water can be caused by several different water conditions: high pH and high total alkalinity levels, intense algae growth, poor pool filtration, or a build-up of swimmer waste.

### Q. What should you do if your pool water is cloudy?

A. Do the following:

»Adjust the pH to 7.2 – 7.6 (see pages 10–11 for information about adjusting the pH).

»Adjust the total alkalinity to 80 – 150mg/l (ppm). (See page 12 about adjusting total alkalinity).

»Adjust the free available chlorine to

1.0 – 4.0mg/l (ppm). (See pages 3 and 4 for information about adjusting the free available chlorine).

»Check the colour of the water. If the cloudy water looks green, your pool water probably has algae. In this case treat the pool for algae. (See page 21 for information about solving this problem).

»Ensure you have adequate circulation & efficient filtration.

»To remove swimmer waste, lower the pH to around 7.2 – 7.6 and then superchlorinate the pool with **Fi-Clor Superchlorinator** to temporarily raise the free chlorine. In a pool of 11,000

Gallons (50m<sup>3</sup>), use sufficient **Fi-Clor Superchlorinator** to raise the free available chlorine to between 5 – 7mg/l (ppm). (See pages 7–9 for further information on superchlorinating).

### Q. What should you do if the cloudy water doesn't clear?

A. Do the following:

»Run your filter longer than normal.

»Use **Fi-Clor Rapid Clarifier** to help your filter remove fine particles that tend to dull the water. (See page 18 for product information).

»If these actions are unsuccessful, contact your pool dealer for advice.

## ▶ TOO MUCH CHLORINE

### Q. What happens if there is too much chlorine?

A. Too much chlorine can cause bleached hair, bleached swimsuits, and possible eye irritation.

### Q. What should you do if you have too much chlorine in your pool?

A. Simply stop adding chlorine, allowing it to fall of its own accord over a few days until the free available chlorine level is 2.0 – 4.0mg/l (ppm) if you are using

**Fi-Clor standard Granules, Maxi Tablets or Premium 5 sanitisers**.

If you are using **Superfast Granules** or **Supercapsules** allow to fall to 1.0 – 3.0 mg/l (ppm).

### Q. What should you do if the free available chlorine is more than 10mg/l (ppm)?

A. If the chlorine level is above 10 mg/l (ppm), and you wish to start using the pool without waiting for the

levels to fall naturally, use **Baquacil Chlorine/Bromine Neutraliser** (sodium thiosulphate). For a pool of 11,000 Gallons (50m<sup>3</sup>), 350g are required to reduce the chlorine level by approximately 1mg/l (ppm). Dose the pool a little at a time, testing after each addition. (See page 4).

**Bathers should not use the pool if the free chlorine is above 10mg/l (ppm).**





# 4 » PREVENTION OR CURE

## ► CHLORINE ODOUR

**Q. What happens if there is strong chlorine odour?**

**A.** Swimmers may misleadingly complain that there is too much chlorine in the water. However, this is invariably not the cause of the problem.

**Q. What causes chlorine odour?**

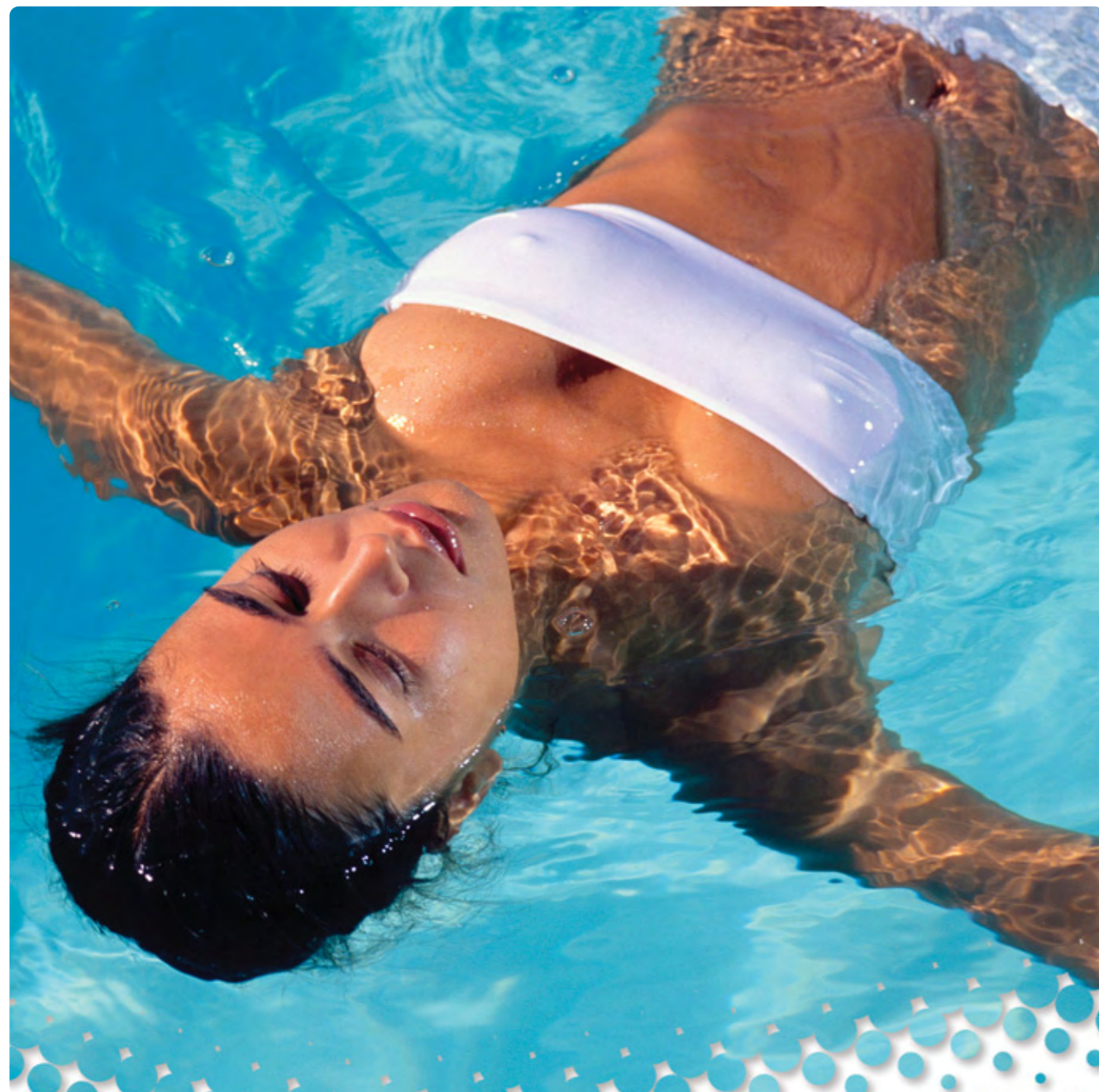
**A.** High combined chlorine (chloramines) produces the unpleasant chlorine like

odour. It is in fact a sign that there is too little free available chlorine present, which is required to break down ('burn out') the combined chlorine (see page 8).

**Q. How can you get rid of the chlorine odour?**

**A.** » Adjust the pH to 7.2 – 7.6 if necessary (see pages 10 – 11 for information about adjusting pH).

» Superchlorinate the pool with **Fi-Clor Superchlorinator** to temporarily raise the free available chlorine. In a pool of 11,000 Gallons (50m<sup>3</sup>), use sufficient product to obtain a level of between 5 – 7mg/l (ppm) (see pages 7 – 9 for further information on superchlorinating). This will break down and remove the combined chlorines.



## ► USEFUL TIP

For more information, ask your Fi-Clor Dealer for one of our Trouble-shooting cards which cover a wide range of situations on tackling pool water problems.

# » SAFETY PRACTICES

## ► SWIMMING POOL SAFETY

It makes good sense to establish safety practices around your pool. Review the safety rules at the beginning of each pool season. Some suggested rules are listed below.

### GENERAL POOL SAFETY

- » No running, pushing, or horseplay around the pool.
- » Shower before swimming. This will reduce the amount of bacteria and contaminants that swimmers bring into the pool.
- » Keep a life saving ring in the pool area.
- » Keep all glass and other breakables away from the pool area.
- » Never use electrical appliances around the pool area.
- » DO NOT swim during thunder or lightning storms.

### POOL SAFETY FOR YOUNG CHILDREN

- » A supervising adult should be present whenever children are using the pool.
- » Install a sturdy fence around the pool.

See [www.fi-clor.co.uk](http://www.fi-clor.co.uk) for further details.

### BE PREPARED FOR AN EMERGENCY

- » Keep a complete first aid kit in a clearly marked and convenient location. Keep this kit out of the reach of children.
- » Family members should be encouraged to undergo training in mouth-to-mouth resuscitation. Ideally this technique should not be practised without the appropriate training.

### ENVIRONMENT TIP :

- » DO NOT back-wash into a stream, river or lake.



## ► POOL CHEMICAL SAFETY



Pool chemicals must be handled with great care. Certain precautions must be taken when handling and storing pool chemicals. Read and follow the dosages, directions and precautionary statements on each product label. Keep all pool products away from children! Fire, explosion, or release of gas can result from misuse. Use these checklists when handling and storing any pool chemicals. In case of emergency ring 999

### POOL CHEMICAL HANDLING CHECKLIST

- » Keep all chemicals out of the reach of children & pets.
- » Read first aid procedures printed on the product's label before using the product. If the product gets on your skin, in your eyes, is swallowed, or is inhaled, follow the correct procedure which is clearly printed on the label.
- » DO NOT use contents of unlabelled containers.
- » Keep an arm's distance away when opening the container.
- » Open all pool chemical containers carefully.
- » NEVER mix pool chemicals with any other substance.
- » NEVER mix different types of pool chemicals. Add each chemical to the pool separately.
- » When pre-dissolving pool chemicals, ALWAYS use a clean plastic container, and ALWAYS add the chemical to the water, NEVER add water to the chemical.
- » Use separate, clean utensils and measuring cups for each pool chemical.
- » Use the exact quantities specified on the product label.
- » Immediately wash your hands after handling any pool chemical.

### POOL CHEMICAL STORAGE CHECKLIST

- » Carefully seal each container tightly after use.
- » Store pool chemicals in a cool, dry place.
- » Keep pool chemicals away from heat or open flame.
- » Keep pool chemicals away from moisture, waste materials, dirt, chemicals (including other pool chemicals), pool chlorinating compounds, household products, soap products, paint products, solvents, acids, vinegar, beverages, oils, pine oil, dirty rags, or any other foreign matter.
- » Keep pool chemicals away from your lawn, shrubs and trees.

### POOL CHEMICAL CONTAINER DISPOSAL CHECKLIST

- » Wash empty pool chemical containers before disposing of them.
- » Dispose of all empty chemical containers according to the label directions on that product.

## FOR AN EMERGENCY CALL: 999

Call 999 if any of your pool chemicals spill. A spill requires emergency handling if there is any sign of activity, such as bubbling, smoking or fire.



# Fi-Clor<sup>®</sup>



Your Local Fi-Clor Pool Shop



Arch Water Products Wheldon Road, Castleford, West Yorkshire WF10 2JT  
Tel:01977 714100 Fax:01977 714006 watersales@archchemicals.com www.fi-clor.co.uk



The information in this handbook is believed to be correct. It is given without warranty or engagement and no licence or immunity under any patent is either granted or implied.

Fi-CLOR and TRI-TABS are Registered Trade Marks

© Arch Chemicals Ltd. 2007