



# Water Treatment

## A guide to swimming pool water treatment

It is a fundamental requirement for the enjoyment of a clean and inviting swimming pool for owners to ensure that the water is free from harmful bacteria, viruses and algae. The water must not cause corrosion or scaling and it should not cause any discomfort to bathers.

Bacteria, viruses and other micro-organisms are carried into the pool by bathers and environmental pollutants; these can then multiply in untreated water. In order to render these organisms harmless, a disinfectant must be used; these are products based on Chlorine and Bromine compounds and are here simply referred to as Chlorine and Bromine. However it is true to say that in general terms Bromine reacts in much the same manner as Chlorine and consequently the text refers only to Chlorine.

For over a century, purification of pool water has traditionally been carried out by adding Chlorine, but new techniques such as ionisation, ultra violet and active oxygen treatments are becoming increasingly popular to assist and compliment the Chlorine product.

## Chlorine

Chlorine is an effective sanitiser when added to water in liquid, tablet or granular form and it offers a simple method of disinfecting pool water. In general, a level of two milligrams of Free Chlorine to one litre of water should be maintained at all times. Two milligrams per litre is a simple ratio and is equivalent to two millimetres in a kilometre. Its effectiveness is, however, dependent on the pH of the water.

pH (pronounced "pea aitch")

pH is in simple terms an indication of whether the water has acid or alkaline properties. The pH scale runs from 1 to 14; 1 being 100% acid, 7 being neither acid nor alkali, and 14 being 100% alkali. The higher the pH, the longer it takes the Chlorine to kill bacteria.

The pH value must therefore be maintained within the range 7.2 - 7.8 (ideally towards the lower end).



## A matter of routine

For outdoor domestic pools, Chlorine has long been the preferred choice. In liquid, granule or tablet form, it is safe and convenient to handle. Today's user-friendly multifunctional Chlorine sanitisers enable you to carry out several tasks simultaneously, killing harmful bacteria etc and keeping the water crystal clear.

A range of test kits are available to measure Chlorine and pH including simple to use kits containing tablets which change colour to indicate the concentration of Free Chlorine and the pH value of the water. Regular testing ensures that corrective action can be taken before an imbalance becomes a problem.

If the water in your pool turns cloudy or green the cause, in nearly every case, will be the lack of Chlorine. Two Mg/l is a good minimum level of Chlorine in the water. However if the water turns faintly turbid, it is because the pollutants in the water, mainly algae, are reproducing quicker than the Chlorine can react. In this case it is necessary to increase the Chlorine level sharply and in one go, keeping the circulation on continuously. It is better to overdose rather than under dose. In some cases where there is a green pool, a dose of 30mg/l may be required. Additionally the pH should be checked as high pH will restrict the efficiency of the Chlorine. Your SPATA Contractor will advise you.

With stabilised Chlorine, eye sting and the stale Chlorine odour is a thing of the past. There are of course other alternatives including the aforementioned Bromine based sanitisers and Chlorine free biocides. Treatments which involve the use of copper and silver ions, ozone and ultra violet, can help reduce the amount of Chlorine residual required.

As always, it is a matter of preference, but your SPATA contractor will advise you of what is best for your pool to maintain it to SPATA Standards.





## Be safe

SPATA will always expect an approved pool company to reinforce safety messages and where applicable, to advise their clients to:

1. Read and follow all instructions on the chemical manufacturers' containers very carefully and to adhere to the instructions rigidly
2. Chemicals should NEVER be mixed together before adding them to the pool water (as fatal gas formation or explosions can occur). Always add a chemical to the water and NEVER add water to chemicals
3. Never put one type of chemical into a container designed for another type, or use an empty container from another product
4. Always store containers in a cool, dry lockable area, separating different chemical containers
5. Ideally pre-dissolve the different chemicals individually in a separate designated bucket and pour the fluid in around the perimeter of the pool, then wash the bucket in the pool after each application
6. Empty chemical containers should be washed out in the pool water, rinsed thoroughly and then disposed of in normal household waste
7. Wash your hands after using pool chemicals (the pool water will do!)
8. Never allow children to handle chemicals

## Know your capacity

Before adding chemicals to your pool it is vital to know its water capacity. The simple formulae given below will enable you to calculate your pool's approximate capacity in gallons or cubic metres (a cubic metre is equal to 1,000 litres or 220 Imperial gallons):

### Circular

Imperial:

$$\text{Dia (ft)} \times \text{Dia (ft)} \times \text{Average Depth (ft)} \times 4.9 = \text{Gallons}$$

Metric:

$$\text{Dia (m)} \times \text{Dia (m)} \times \text{Average Depth (m)} \times 0.8 = \text{Cubic Metres}$$

### Oval

Imperial:

$$\text{Long Dia (ft)} \times \text{Short Dia (ft)} \times \text{Average Depth (ft)} \times 5 = \text{Gallons}$$

Metric:

$$\text{Long Dia (m)} \times \text{Short Dia (m)} \times \text{Average Depth (m)} \times 0.9 = \text{Cubic Metres}$$

### Rectangular or Square

Imperial:

$$\text{Length (ft)} \times \text{Width (ft)} \times \text{Average Depth (ft)} \times 6.23 = \text{Gallons}$$

Metric:

$$\text{Length (m)} \times \text{Width (m)} \times \text{Average Depth (m)} = \text{Cubic Metres}$$

### Irregular

Estimate dimensions equivalent to rectangular or circular and determine as above.

