
# Swimming Pool Basics

*By Mike Bryson, June 2007*

Maintaining a pool is about more than just turning on a filter and a vacuum. It's a time consuming process involving the checking and adjustment of chemicals on a daily basis. We look at what equipment you'll need and what's involved in the ongoing upkeep of your pool.
There are three main types of filters:

**Sand Filters**
This filter uses sand to trap debris. The sand should only need replacing every 8-10 years - sand filters are the easiest to maintain and operate. By virtue of this and the fact they're the cheapest option they are by far the most popular type of filter.
Sand filters are cleaned by 'backwashing'. A special valve, generally a 'multi-port valve', reverses the flow of water through the filter to loosen the collected debris and sweep it into the drainage pipe.

**Diatomaceous earth (DE)**
DE is a fine powder composed of fossilized algae. The DE is placed on a plastic filter grid that is covered by a nylon sock that the water passes through. DE filters are capable of filtering out finer particles. DE filters are cleaned using the same technique as sand filters.

**Cartridge**
The filter inside the cartridge is made out of polyester cloth or corrugated paper. It's folded like a concertina so as to filter the most amount of debris out as possible.
Cleaning cartridge filters is more time consuming, because a cartridge filter is not attached to a reversible valve and cannot be backwashed. Instead, the filter needs to be manually removed from the cartridge and hosed off. If you don't have space for a multi-port valve this is your only option.

There have been enormous strides in the advancement of filtration Europe is much further ahead of Canada in this area. When you think about it most of Europe doesn't have the luxury of all the water that we do here. They can't simply dump the pool and start over when the chemistry gets out of control. There are systems known as multi media filters that are proving to be the ultimate in water clarity. I'll discuss these in more detail in future issues.

**pH**
pH is a scale measuring acidity and alkalinity. 0 is the strongest acid, 14 is the strongest alkali, and 7 is pH neutral.

A swimming pool needs to be very slightly alkaline, having a pH between 7.0 and 7.6. Chlorine works best at lower levels of pH. Your pool and equipment will also be damaged if the pH is too unbalanced.

To adjust pH, you need to add an acid, like muriatic (hydrochloric) acid, or an alkali, like baking soda (sodium bicarbonate), soda ash (sodium carbonate) or caustic soda.

**Total alkalinity (TA)**
It is important to have some mineral salts, which are alkaline, dissolved in your pool to 'stabilize' the pH level. The correct TA will prevent sudden changes in pH, and a low level will also lead to erosion of painted and concrete surfaces. The recommended level is 80 to 120 parts per million.

**Calcium hardness**
The level of calcium in your water is also important. Low levels make water corrosive, and high levels result in scale formation. Standard testing kits generally include a test for calcium hardness.

**Sanitizing with chlorine**
Pools are a breeding ground for bacteria, the main cause being the actual swimmers. Other causes are untreated water from rain, or topping up as well as any debris such as leaves.

Bacteria can cause illnesses ranging from ear, nose and throat infections to serious diseases like meningitis.

The most common way of protecting pools from bacteria is chlorine. There are four common ways of administering it: granular, tablet, liquid, and via a salt chlorinator. Each method gives the same result; all you need to do is pick a method in line with your budget and lifestyle.

**How chlorine works**
Chlorine kills bacteria by oxidising (essentially 'burning') them. You need to maintain a level of 'free' chlorine in your pool to kill any new bacteria, 1-3 parts per million. However, the chlorine level is not constant.

A by-product of the oxidising reaction is chloromines a half-oxidised pollutant. If there's not enough free chlorine, then all the chlorine will react to become chloromines. Basically a chloramine is a chlorine molecule that has attached itself to a nitrogen or ammonia molecule. Its about 100 times less effective than normal chlorine is.

It is the chloromines that give your pool a chlorine smell, or the stinging sensation in bathers' eyes indicating a low level of chlorine, not a high one. The way to get rid of and prevent chloromines is to regularly add a "shock" product to help burn up those unwanted chloramines. Chlorine reacts with the sun's UV rays, but using 'stabilised' chlorine (available in granular and tablet form) will extend its life. Stabilised chlorine is acidic, so will also slowly reduce pH and TA.

## Types of chlorine

**Gas Chlorine**
At one time this method was widely accepted and used in commercial pools. It is 100% effective and if used with proper safety and caution is still one of the most effective ways of keeping water germ free

**Granular chlorine**
The cheapest type pf chlorine but it needs to be added manually. The granules aren't 100 per cent reactive, so they will also result in some waste material. The cheaper the chlorine, the more the residue.

**Chlorine tablets**
Slow-dissolving in cool water and can be dispensed automatically via a floating unit or erosion feeder (so called because it passes water from the filter over the tablet to erode it away).

**Liquid chlorine**
Is corrosive (pH of around 13.0) and should be handled with care. However, it's totally soluble,

can be automatically dispensed via an electronic system or a salt chlorinator and is ideal for superchlorination.

**Salt chlorinators**
One of the most popular way of administering chlorine. It's a machine connected to the filter piping that uses salt and electricity to react with the pool water to create chlorine.

**Pool vacuums**
These can be automatic or manual and are used to clean the bottom and sides of your pool. There are four main categories:

**Suction cleaners**
The common crawler unit which is powered by the pool's filter unit and sucks debris through a tube into the pool's skimmer box.

**Pressure cleaners**
Generally uses a separate pump to boost water pressure from the pool return line, squirting the high-pressure water around the pool. Debris is collected in a bag or the cleaner's body. Recommended for very leafy situations.

**Electric self-propelled cleaners**
A self-powered crawler that also collects debris in its body. More appropriate for commercial pools as the unit can be put in when the pool is closed overnight.

*Hope this was a bit informative. Like I mentioned there will be new articles every issue that will target a different area of pool operations.*

*Till then I hope your pool operations are smooth ones.*