

EPOXYMAN (LINE-A-POOL)

SWIMMING POOL MAINTENANCE GUIDE

1. INTRODUCTION

A swimming pool provides the benefits of relaxation, pleasure and healthy exercise as well as a point of visual focus when built in a garden at home

However, water in a swimming pool is constantly being contaminated, by bacteria and dirt carried in by bathers and from the environment, such as insects, bird droppings and air-borne spores

This water is also a natural environment for algae Although generally harmless, algae causes slippery surfaces, provides nutrients which support bacterial growth and looks unsightly.

Pool water must be treated appropriately for safety, ensuring that the water quality approximates that of potable water.

This booklet has been published to assist pool owners manage the hygiene and appearance of their swimming pools, enabling them to economically and effectively take care of this valuable asset

2. CONTROL OF pH

The balance between acidity and alkalinity is referred to as pH. It is represented by numerical values ranging from 1,0 to 14,0 A value of 7,0 indicates a neutral condition, neither acid nor alkaline Values below 7,0 represent an acidic condition increasing in intensity as the numerical value decreases Alkaline conditions are represented by values above 7,0 increasing in strength as the numbers become greater The ideal pH for pool water is generally between 7,2 and 7,6

Regular use of a test kit to establish pH levels is vitally important. Controlling pH prevents a large proportion of pool problems, and ensures the pool is maintained most economically pH is tested by taking a 10ml pool sample and adding either 5 drops of phenol red solution or 1 phenol red test tablet If the pH is ideal the test sample will turn orange, if high, red, and if low, yellow

Decrease pH by adding Hydrochloric Acid (When purchasing pool acid choose acid with the lightest colouration. This is an indication of acid with the least metals and contaminants) Sodium Bisulphate or Dry acid may also be used.

Increase pH by adding soda ash (Sodium Carbonate) to marbelite pools or Alkalinity Increase (Sodium Bi-carbonate). Always use small doses checking 2 hourly to gradually adjust the pH either up or down

3. SANITATION

Adequate sanitation and pH control are probably the two most important aspects of pool water treatment Various approaches can be used to sanitize pool water:

3.1 Chlorines

The recommended levels of 1 — 3 mg/L should be maintained at all times. In winter we suggest that 1-1.5 mg/L of chlorine is used whilst in summer 1.5 — 2 mg/L should be sufficient to maintain a healthy pool environment

Chlorine Donors

In South Africa the most common chlorines available are stabilised chlorine tablets, stabilised chlorine granules and unstabilised chlorine granules and tablets.

Stabilised Chlorine Tablets

The raw material, Trichloroisocyanuric acid, is fully imported either in granular form or 190 gram tablets. One of the components included in the raw material is Cyanuric Acid, more commonly known as Stabiliser. As the tablet dissolves over a period of about 7-10 days the Stabiliser is released and thereby supplements Stabiliser that is lost either by splash-out or by backwashing the filter.

Remember when putting your pool on the Pill, your first step is to put in sufficient Stabiliser, which can be purchased in most stores that stock pool products (see dosage table,) Stabilizer will assist to retain chlorine in your pool water as it acts as a sunscreen. Without Stabiliser Chlorine will be dissipated by the sun. On a hot summer day all the chlorine in the pool will dissipate by about 10 am. In this event, bacteria and algae will multiply until the chlorine residual reaches an adequate level to eliminate them.

Stabiliser must only be added once at the initial stage. The dissolving stabilized chlorine tablet will supplement any losses as stated earlier. When using any other form of Chlorine, Stabiliser levels must be checked every six months to ensure that the level is sufficiently high, i.e. 35 parts per million parts of water (ppm), to be effective. Test Kits are available for this purpose.

Stabilised tablets are made from acidic material so the addition of Pool Acid should never be necessary when using this product. An occasional dose of Soda Ash may be required to correct the pH of the water.

Stabilised Tablets are also available in convenient dispensers called Feeders or Floaters. This form of chlorination is highly recommended as a cost-effective and convenient form of sanitation. The benefits include 24-hour protection, no scaling or calcium deposits (particularly on the mosaic/ tile surround), replacement only every 3 — 4 weeks and no additional pool acid costs.

Chlorine Tablets Unstabilised

These tablets are made from Calcium Hypochlorite granules. They dissolve very quickly and do not contain stabilizer. They are not recommended for maintenance because of their lack of cost effectiveness.

Calcium Hypochlorite Granules (Unstabilised)

The recommended dosage for the average pool is 250 grams daily. The time of dosing must be in the later afternoon, or early evening, to prevent any loss through dissipation by the sun. This form of chlorination is quick and effective, but has the disadvantages of daily maintenance and calcium build-up that scales and coats the mosaic and generally requires more chlorine, which adds cost. Since the product is alkaline in nature Pool Acid will be required on a regular basis to maintain pH at 7,2 to 7,6 ppm.

Sodium Hypochlorite (Liquid Chlorine)

Highly soluble and effective. The product remains effective for approximately 2 -3 weeks after manufacture, thereafter the available chlorine in the product deteriorates fairly rapidly. After 6 -8 weeks it is no longer sufficiently effective to combat algae and bacteria. Its main uses are in industry, it is not recommended for home pool use.

3.2 Other Sanitisers

Metals (Copper)

A variety of pool products contain metals as sanitisers. These products are not recommended as they are environmentally persistent, (accumulate to unacceptable levels) and often stain the pool shell. Read all labels carefully and look for metals before purchasing products.

Peroxide

This product is an excellent environmentally friendly sanitizer 5 litres of 35% solution in 50 000 litres of pool water provides sufficient protection for up to 10 days Peroxide has only to be added infrequently to maintain a bacteria-free swimming environment On the negative side, as it is a strong oxidiser.it is important to handle the product with care. A suitable vented container should be purchased and kept upright at all times.

Ozone Approach

Improved technology has provided us with the ability to offer Ozone generators. Ozone can replace partially or totally Chlorine in the pool. It is many times more effective in getting rid of bacteria & viruses than Chlorine For more information see our website <http://www.line-a-pool.com/products.html> Salt water chlorinators. Considerably cheaper than chlorine see our website <http://www.line-a-pool.com/products.html>

4. WATER BALANCE

Many problems occur as a result of an imbalance in pool water. Water is extremely complex and a great number of factors affect its balance. Factors that commonly affect pool water are as follows:

- Chlorine level
- pH level
- Calcium Hardness
- Total Alkalinity
- Cyanuric Acid level
- Metal content
- Total dissolved solids

The most common problems, as stated previously, are related to Chlorine and pH control. However, in spite of correct Chlorine and pH levels, it is possible that certain pool problems will constantly recur. These problems occur as a result of one or more of the above factors being out of balance

(Water balance problems are discussed in more detail under the heading Pool Problems)

5. ALGAE

Approximately 250 -300 varieties of Algae exist on earth, some dating back 170 million years and still in the same form. Algae are extremely resistant forms of growth, and are able to withstand most of man s efforts to kill them. Certain forms of Algae can be killed, but not eradicated completely, because Algae is constantly perpetuated by nature.

In layman s terms, we deal with three main forms of Algae in swimming pools, namely:-

- Green Algae
- Black Algae
- Mustard Algae

Green Algae is either free floating, which is a mild form, or green growing Algae found on pool steps and on mosaic tiles

Black "Algae" is probably the most resistant of the above three forms. Usually seen in the deep end of pools, on the shady side first. The water may well be crystal clear but these 'black' spots occur. They can be brushed off in the initial stages but brushing alone will not kill this Algae If left too long the roots of Black Algae will become established in the concrete wall of the pool, which makes it almost impossible to kill completely. *

Black "Algae" is a term used to describe a variety of dark coloured organisms that are highly resistant Some types form an outer skin that acts as a repellent, protecting it from chemicals. Black "Algae" requires a powerful algaecide and vigorous, regular brushing

Mustard Algae appears in sheet form on the walls of the swimming pool. If not checked and

killed, this Algae will spread into huge patches on the pool walls and floor, eventually causing stains that are extremely difficult to remove. In harsh, humid weather this Algae growth will appear frequently and must be dealt with as it appears. This form of Algae is the consequence of under dosing when sanitizing a pool, the cells are injured but not killed, they change colour and develop a higher resistance to treatment.

Should Black Algae persist a complete re-line may be necessary see our website

<http://www.line-a-pool.com>

6. FILTER FACTS

Filtration plays an essential part in achieving the perfect swimming pool. No matter what chemicals are used, without an efficient filter the pool water can never be kept clean.

The purpose of the filter is to remove foreign materials such as dust, leaves, Algae, etc. from the pool

Filters will get clogged up periodically. This will show on the filter's pressure gauge. When this happens the filter must be cleaned, in order to continue operating efficiently

High-rate Sand Filters

Unlike the old sand filters that traditionally used different grades of sand at different levels inside the filter. High-rate sand is efficient and can be cleaned effectively by backwashing. Ease of operation makes this filter popular but one must be aware of the amount of water required to backwash.

Once every 2-3 years a sand change may be necessary for complete instructions see

<http://www.line-a-pool.com/sand.htm>

7. STARTING UP A NEW POOL

Generally, water supplied from Municipal mains in the main centers in South Africa is alkaline. This means that the water will require an amount of Pool Acid during the first three months after filling, before a balance between acidity and alkalinity will be established, i.e. the pH of

Remember, never overdose — even during this time

When the pool is first filled, it is normally cloudy and sometimes green. Dose with approximately 2 Kg Chlorine and correct the pH of the water.

Do not add Chlorine and Pool Acid simultaneously. Thereafter, continue normal dosing with a sanitizing agent.

8. WINTER TREATMENT

From mid-April onwards, the following steps will suffice during the winter months until the end of July

- (a) Use half the quantity of Sanitizer that you normally use. Do not stop using sanitizers altogether. Algae is still active during our warm winter days
- (b) Run the filter half as long as it runs in summer
- (c) Brush the pool and clear the leaf trap on a regular basis. There is more debris, i.e. leaves, dust, etc about in winter than there is in summer.
- (d) An excellent preventative measure is to add 1 bottle of Blue in April, one in June and another at the end of July. By doing this, great expense will be saved by avoiding large start-up costs when summer arrives
- (e) Some pool owners choose to cover their pools with plastic covers that are readily available. This reduces the environmental impact on the water, i.e. less dust, leaves, etc. A smaller dose of sanitizer should still be applied to ensure that algae does not take hold on warmer winter days and that the water is bacteria-free

Note: Do NOT empty a swimming pool as this could cause cracks in the walls and floor of the pool.

9. TROUBLE SHOOTING

Trouble: Pools goes cloudy or green

Causes: Often caused by a high pH or under-sanitation, which results in Algae Growth

Remedy: Correct the pH to read between 7,2 — 7,6 with Pool Acid or Alkalinity Increase being careful not to overdose

Shock dose with 4 — 6 cups of Chlorine. Add 1,5 Litre Algaecide the following morning

Trouble: Pool turns Brownish Colour when chlorine is added

Causes: Low pH and when Chlorine is added it reacts with the water causing the iron in the water, which is normally present but cannot be seen, to come out of solution and become visible This can also cause bad brown stains on walls and floor.

Remedy: Lower chlorine level (withdraw chlorine treatment until the Chlorine level measures below 0,5ppm) and add 1,5 litre Metal Marvel. This removes the iron from the water by precipitation. Correct the pH, then vacuum to remove the resultant brown dust from the pool floor.

Trouble: Algae growing on the walls and floor of the pool

Causes: Hot days with high humidity or thunderstorms, also under-sanitation and insufficient brushing.

Remedy: Brush vigorously. Thereafter, add a bottle of *Algaecide* in the morning Shock dose in the late afternoon with 4 times the normal recommended dose of Chlorine and brush again.

Trouble: Mustard/green colour algae suddenly appears on the pool walls

Causes: Usually insufficient sanitation

Remedy: Correct pH Brush the algae off the walls. Add one bottle of *Algaecide* following instructions on the bottle. Then shock dose with Chlorine in the late afternoon and brush once more.

Trouble: Black algae spots appear mostly in the shady side of the deep end

Causes: Under-sanitation and general neglect of pH testing and brushing.

Remedy: Brush vigorously with a stiff or *Stainless Steel Brush* if on marbelite surface or with a very hard polyprop *Algae Brush* if on a painted surface Add a bottle of *Algaecide* carefully following instructions. Shock dose with chlorine for next 2 days in the late afternoon approximately 3 cups at a time. Ensure correct pH prior to any chemical treatment.

Trouble: Pool smells of Chlorine and shows a correct Chlorine reading on the test kit but is green or cloudy

Causes: Build-up of chloramines. which are the waste products of spent Chlorine and that have the classic chlorine smell.

Remedy: Shock dose with about 3 — 5 times normal recommended dose of *Chlorine*.

Trouble: pH and Chlorine readings are correct Water is blue but remains cloudy.

Causes: Fine matter in suspension in the water, too small to be trapped in the sand filter.

Remedy: Backwash filter and then pour 200 ml *Water Clarifier* into the weir of the pool. The flocculent will coagulate the small particles, which in turn will be trapped in the sand.

Trouble: Contact with water causes eyes to burn.

Causes: Normally caused if the pH of pool water is too tow (acidic)

Remedy: Add Soda Ash or Alkalinity Booster in small doses, i.e. 500 grams at a time until the pH reading is between 7,2 and 7,6.

Trouble: The pressure of the water flowing into the pool drops and the pressure is either too high or too low

Causes: The pressure of the water flowing into the pool drops appreciably and the reading on the pressure gauge of the filter is either (1) high or (2) very tow.

(1) If the reading is high then the filter is clogged and needs backwashing
(2) If low, then the weir or pump baskets are clogged with leaves or debris
Remedy: (1) Backwash filter (2) Switch off motor and clear pump and weir basket of all debris.

Trouble: A dark ring of dirt appears on the mosaic tiles at water level

Causes: Body oils, suntan lotion, etc.

Remedy: Use *Hydrochloric Pool Acid* diluted 5 parts water to 1 part acid to remove this dirt. Protect hands and eyes during this operation

Trouble Stains or marks on marble or plaster surface

Causes: Metal objects, i.e. coins, hairclips, etc. or leaves, fruit, etc.

Remedy: Most small stains or marks can be removed by using an Emery Sander or a Stainless Steel Brush. If marks are large and persist, then the pool must be emptied and acid washed (using *Hydrochloric Acid*) A re line may be necessary see <http://www.line-a-pool.com>

Trouble: pH too low

Causes: Too much acid or acidic compounds have been added

Remedy: Add Soda Ash (see dosage table page 8 for correct dose)

Trouble: pH Test erratic; not working properly

Causes: Phenol solution has been left in sunlight and turned yellow or is old.

Remedy: Replace solution. This solution should be replaced every 3 months.

Trouble: Chlorine test water remains clear.

Causes: There is no chlorine in the pool

Remedy: Remember to always test for Chlorine in the morning before 8.30 am. The sun will start to dissipate Chlorine after this time. If the Chlorine level is still too low then increase the dose that is being added each day.

Trouble: Dust remains in a suspension in the water

Causes: Usually as a result of wind or heavy rainstorms

Remedy: Use *Aluminium Sulphate* powder Approximately 2 Kg per 50000 litres Broadcast the powder across the surface of the water with the filter off Leave overnight The Alum Powder will settle to dust on the pool floor Vacuum to waste the next day

10. POOL VOLUME CALCULATION To calculate volume of measurements)

Rectangular

Length x Width x Average Depth x 1000 = Litres

Oval

Length x Width x Average Depth x 785 = Litres

Round: Diameter x Diameter x Average Depth x 785 = Litres

For more accurate measurements see our website [Calculators](#)