



**CAPO INDUSTRIES LTD.**

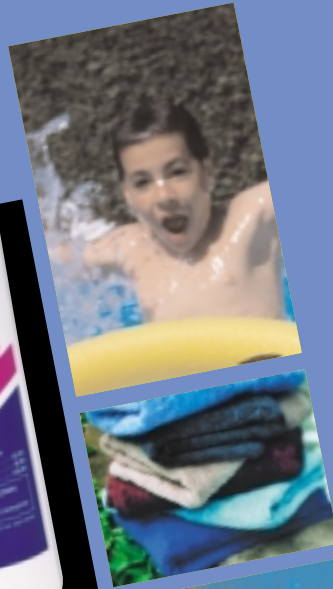
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# PoolBoss

\$2.50

A Comprehensive Guide to

# Swimming Pool Care



# POOLBOSS

Enjoy your pool with pride and confidence:

Your swimming pool will offer years of leisure time and pleasure if you follow a few simple maintenance schedules. A sparkling clean pool is a joy to use and a healthy recreation for the entire family. In addition to keeping your pool free of leaves and other foreign materials that can cloud the water, you must maintain proper chemical balance to destroy bacteria and prevent the growth of algae. PoolBoss quality products properly applied will ensure a healthy pleasant pool. This booklet has been prepared as a step-by-step guide to water control. Your PoolBoss Dealer will be pleased to answer any questions regarding specific or unusual problems. After you have read the book, keep it handy as an easy reference.



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# MAINTENANCE

## Swimming Pool Care:

### Three distinct partners are necessary in Swimming Pool Care:

#### 1 Filtration

##### **Filtration System**

The filtration system is designed to remove debris that is not dissolved in the pool water. It must operate efficiently and long enough to do the job. All areas of the filtration system including the skimmer, pump, pumps strainer, drains and the the filter itself must be kept clean. Remember, if your filter system doesn't work, neither will your chemicals.

#### 2 Physical Cleaning

##### **Physical Cleaning**

The surface of the pool water is being continually cleaned by the automatic skimmer. However, large objects such as leaves should be removed by a hand skimmer. The pool sides and bottom should be brushed daily.

A physically clean pool uses less chemicals.

#### 3 Chemical Treatment

##### **Chemical Treatment**

Chemical Treatment involves proper water balance. No pools are exactly alike and neither is their water. Certain factors concerning the water need to be controlled before your disinfectant will work efficiently. These include: pH, Total Alkalinity and Calcium Hardness.





# ... MAINTENANCE



## 3 ...Chemical Treatment continued

### pH

Simply, pH is a scale indicating whether the pool water is basic, neutral or acidic. This is a very important test for the pool owner. Swimming pool water should be kept slightly basic; 7.2-7.6. If the pH is within this range, the chlorine will work at full strength and the pool will not be damaged by overly acidic or alkaline water.

A low pH leads to corrosion of pool parts and damage to the pool surface. Swimming is uncomfortable, causing skin and eye irritation.

A high pH reduces the chlorine's sanitizing strength and invites algae and bacteria growth. Possible scale formation and cloudy water can exist. The pH of the water is determined by a simple colour test. It is adjusted by adding **pH Up** or **pH Down** as per the directions on the label.



### Total Alkalinity

Total Alkalinity is a measurement of the alkalines in the water. They act as a pH Buffer or a pH Stabilizer, preventing large changes in the pH and avoiding corrosion and staining. The ideal range for plaster pools is 80-125ppm. Vinyl or fibre-glass pools should be 125-150 ppm. Tablet chlorines and bromine tend to gradually lower the alkalinity level. Regular alkalinity testing is necessary by a pool professional. Total Alkalinity should be adjusted **before adjusting the pH**.

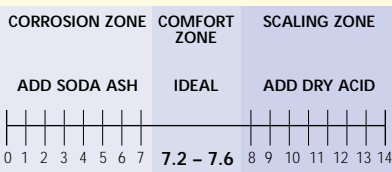
#### Recommended Sodium Bicarbonate Dosages

YOUR POOL CAPACITY (Gallons)	TO RAISE TA (Total Alkalinity)		
	10 ppm	20 ppm	30 ppm
5,000	.75 lbs.	1.50 lbs.	2.25 lbs.
10,000	1.50 lbs.	3.00 lbs.	4.50 lbs.
20,000	3.00 lbs.	6.00 lbs.	9.00 lbs.
35,000	5.25 lbs.	10.50 lbs.	15.75 lbs.
50,000	7.50 lbs.	15.00 lbs.	22.50 lbs.

#### Recommended pH Down Dosages

YOUR POOL CAPACITY (Gallons)	TO LOWER TA (Total Alkalinity)		
	10 ppm	20 ppm	30 ppm
1,000	0.16 lbs.	0.32 lbs.	0.48 lbs.
5,000	0.80 lbs.	1.60 lbs.	2.40 lbs.
10,000	1.60 lbs.	3.20 lbs.	4.80 lbs.
15,000	2.40 lbs.	4.80 lbs.	7.20 lbs.
20,000	3.20 lbs.	6.40 lbs.	9.60 lbs.

### pH CHART





## Calcium Hardness

To prevent corrosion of metal equipment and etching of plaster, make sure calcium hardness is within the desired range of 150-280ppm. If the hardness tests low, add Cal-Plus as directed. There is only one practical remedy to lower calcium hardness: you must partially drain the pool and refill it with softer water.

Usually hard water contains metals. If hardness exceeds 280ppm add a sequestrian agent. Staining, scaling and corrosion can occur if minerals are out of balance.



## Chlorine Treatment

**Chlorine is added to the water for two reasons:**

- 1 Killing of bacteria (disinfection).
- 2 "Burning-out" or oxidizing contaminants that come into a pool by perspiration, urine, pollen, dust, leaves and exhaust fumes.

### Stabilized Chlorine Concentrate

is the modern chlorine able to perform 24 hours a day. It has a built-in sun screen preventing chlorine from evaporation by ultra violet rays. With this improvement, **Stabilized Chlorine** works effectively around the clock destroying bacteria and maintaining water quality.

Chlorine must be added regularly to maintain a "free-chlorine" reading of at least 1 ppm. Chlorine can be added semi-automatically by placing stabilized tablets in a skimmer basket, automatically by using stabilized tablets in a chlorinator, or manually by hand feeding stabilized granular chlorine directly into the pool for instant results.

Do not drop tablets directly into the pool.





## Bromine Treatment

Bromine, like chlorine, is a disinfectant used to kill bacteria and oxidize contaminants. The bromine reading in your pool should be 3-5 ppm. Bromine tablets should be placed in an automatic feeder for continual disinfection. Like chlorine tablets, bromine lowers the total alkalinity and pH of pool water. Bromine has less odour than chlorine and will not cause irritation to the eyes.

## Do we need to stabilize?

Chlorine is burned off very quickly from the water by the ultra violet rays of the sun. Therefore, to help maintain a "free chlorine" reading of 1.0 to 1.5 ppm, **Pool Water Stabilizer** or cyanuric acid is added to your water until the desired range of 30-40 ppm. is met.

The stabilizer remains in the water at all times and does not evaporate. An outdoor pool that isn't stabilized wastes chlorine. To add Stabilizer, make sure the filter is clean, then add the Stabilizer slowly into the skimmer with the pump running. Since Stabilizer dissolves slowly, do not backwash or clean the filter for two to three days. Because bromine cannot be stabilized there is no need to add Pool Water Stabilizer.

## Shock Treatment

Organic matter from swimmers' waste such as perspiration, urine, hair sprays and suntan oil are not filtered out and can build up in the pool water. This waste reacts with chlorine and creates combined chlorine. This will cloud water, encourage algae, cause eye irritation, and create an unpleasant chlorine odour. It is necessary to "burn-out" or oxidize these components. This is done by a super-chlorination or non-chlorine shock treatment. Both are effective. Super-chlorinated shock treatment raises the chlorine up to ten times its normal level and should be carried out at night or when the pool is not in use. It is wise to remove any pool blankets for 8 hours until the shock treatment has been completed.

The non-chlorine shock treatment dissolves instantly and allows the use of the pool immediately after the application. Shock treatments should be done regularly every seven to ten days. During periods of excessive heat, heavy bathing, or heavy rain, it may become necessary to shock your pool every week.

## Algae

Algae are microscopic forms of plant life found in the air, soil and water which grow rapidly if there is sufficient "free-chlorine".

The regular use of an algaecide will help prevent algae from forming. If due to neglect your pool becomes algae infected, we have algae destroyers that will turn your water crystal clear again.

# OPENING YOUR POOL

## Summer's Here!

If you have just purchased a pool, or it had been shut down for the winter, follow these steps to start up again.

### 1 Remove the pool cover

Clear the cover from leaves and debris that might have collected over the winter. If the cover has water on the top, drain this off. Do not feed it back into the pool as this could alter the pool water balance drastically.

### 2 Fill the pool

The water level should be up to the middle of the skimmer opening.

### 3 Physical Cleaning

Remove leaves, sticks and debris with the leaf net. Check that your filtration system is working and vacuum the pool.

### 4 Take a sample

of your water to your pool dealer for a complete analysis. The water should be taken 18" down and away from the returns. Use a clean plastic water sample bottle available at you dealer and not a "pickle jar".

### 5 Test Reagents

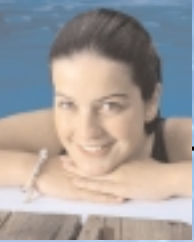
Make sure that your test reagents are new to get an accurate reading from your home test kit.

### 6 Water Balancing

Some pool owners have purchased more sophisticated test kits or test strips which can test for alkalinity, stabilizer, hardness, as well as pH and Chlorine. Otherwise, take a water sample to your dealer and adjust your pool water chemically as follows:

- a.) **Adjust Total Alkalinity** to 80-125 ppm. for plaster pools; 125-150 ppm for vinyl pools. Total Alkalinity should be adjusted before adjusting the pH.
- b.) **Adjust pH:**  
For chemical efficiency and swimming enjoyment, pH should be 7.2 - 7.6.
- c.) **Test Stabilizer Level:**  
Measure the amount of pool water stabilizer or cyanuric acid. Make sure the pool has at least 30 ppm. to prevent loss of chlorine from the sun's ultra violet rays.
- d.) **Check Calcium Hardness:**  
The desired range is 150-280 ppm. At this point we recommend adding a sequestrian agent before shocking the pool. If dissolved





# ...OPENING YOUR POOL

metals have made their way into the pool water during the winter or are present in the make-up water, they will stain the pool after a shock treatment. **Metasol** will hold these metals in solution and prevent discoloration.

### e.) Shock Treatment

This is necessary to oxidize water soluble organic matter that the filter cannot remove. It can either be accomplished by super-chlorination with **Pool Shock** or non-chlorine oxidizers such as **Oxy-Out**. Shocking should be carried out every 7 to 10 days during the swimming season.

**f.) Algaecide:** At the beginning of spring the weather can be very unpredictable. Unseasonably warm or cold periods may occur and neglect of the pool water can lead to algae. The addition of a poly algaecide safeguards against this.

**g.) Chlorine:** Adjust your chlorine level to 1.5-3.0 ppm. and maintain a regular chlorine addition of 60 gms per 50,000 litres or 2 oz. per 10,000 gallons.

**Bromine:** Adjust your brominator to a bromine level of 3.0-5.0 ppm.



# CLOSING YOUR POOL

## Winter Shutdown

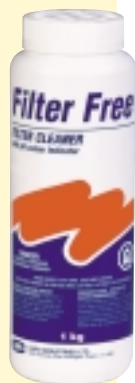
Closing your pool properly makes next year's start-up easy and avoids expensive clean up and repairs.

Follow this easy guide:

If you can't use your pool during the winter months, you should protect your investment and shut down the pool completely.

- 1 Take a water sample** to your pool dealer to find out what is needed to balance your water and insure there are no irregularities.
- 2 Adjust the Alkalinity** to 80-150 ppm.
- 3 Adjust the pH** to 7.2-7.6.
- 4 Adjust the calcium hardness** to 150-280 ppm.
- 5 Add Metasol** to guard against metal stains and bathtub ring during the winter.
- 6 Physically clean the pool.**  
Brush the pool sides and vacuum the bottom. Clean out the skimmer basket and the pump's hair trap. Store both baskets. If the filter has not been cleaned all season, now is the time. A dirty filter can result in hardened scale deposits that cake over the winter.
- 7 Shock** treatment is necessary to oxidize any dissolved organic matter that physical cleaning and filtration could not remove. Run the pump and filter a few hours to insure thorough distribution.
- 8 Algaecide:** Because the fall temperatures are unpredictable, it is recommended that an algaecide be used to protect the pool from algae growth. When the filtration system is not operating, algae can take over very quickly.
- 9 Partially drain** the pool to about 4" below the bottom of the skimmer.
- 10 Drain the water** from pump, hoses, pipes, heater and filter. In some climates, anti freeze is needed but never use R.V. or Automobile anti-freeze which is toxic. Turn off the gas/electricity to the heater.
- 11 A cover** is recommended to catch the winter debris and make the start-up easier. It also reduces the use of pool chemicals.

In warmer climates where complete shut-down is not necessary, continue routine maintenance but on a reduced schedule. Testing for pH for Free Chlorine can be done weekly instead of daily. If the temperature drops below freezing, keep the filter on to prevent the pipes from freezing.



# POOL CHEMICALS

## Safety Tips

**When using chemicals, read the labels carefully and follow directions precisely. Chemicals, when used correctly, protect you in the water but can be hazardous in concentrated forms.**

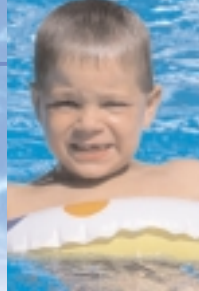


### Observe these guidelines.

- 1 Do not add water to chemicals, add chemicals to water.
- 2 Use only clean, dry scoops to transfer the chemical from the pail to the mixing container or to the pool.
- 3 Always keep chemical containers closed when not in use and place cap on proper container. When empty, do not reuse container.
- 4 Handle all chemicals, liquid or dry, with care. Store in a cool, dry, well ventilated place.
- 5 Store Muriatic Acid separately from your chlorine supply. A spillage of Muriatic Acid can be neutralized by Soda Ash (pH Up) or Alka-Plus.
- 6 Keep chemicals out of reach of children.
- 7 Use only Stabilized Tablets in an automatic chlorinator. Do not use Calcium Hypochlorite Tablets.
- 8 Avoid inhalation of escaping hazardous gases and fumes. Move anyone overcome to an open area and obtain medical assistance.
- 9 Keep a first-aid kit handy, but out of reach of children.



# Ideal Swimming Pool Water Conditions



Variable	Recommended Level	Means to Control
CL <sub>2</sub> - "free chlorine" Bromine	1.0-3.0 ppm 3.0 - 5.0 ppm	Regular, manual or automatic feeding of chlorine or bromine
Stabilizer (Cyanuric Acid)	30-50 ppm	Add Stabilizer if low. If high, drain pool water.
Total Alkalinity	80-150 ppm	Add acid if high Add Alka Plus if low
Hardness (CaCO <sub>3</sub> )	150-280 ppm	Add Metasol if higher Add Cal Plus if low
Dissolved total solids	Less than 500 ppm	Routine backwash of a percentage of water
pH	7.2 - 7.6	Adjust with pH Up or pH Down
Temperature	80°F (28°C)	Adjust pool heater or solar blanket use
Chloramines or other combined chlorine	Less than 0.1 ppm	Superchlorinate as required or treat with Oxy-Out to keep chloramines at a minimum
Bacteria Count A. Total B. Coliform	Less than 200 on 85% of samples None	Regulate levels of "free-chlorine" in range 1.0 - 1.5 ppm or Bromine 2.0 - 5.0 ppm
Algae	None	Regular algaecides to prevent algae Formula 500 to kill visible algae.
Water clarity	Clean and clear	Proper filtration, pH, chlorine and alkalinity in proper range. Addition of Clarifier. Routine backwash of a percentage of water.
Iron and copper metal	Less than 0.1 ppm	Addition of Metasol or Floccing with C-Clear

# TROUBLESHOOTING

## Problem

## Possible Cause

### Cloudy Water



- Combined Chlorine in the water
- pH too high
- Total Alkalinity too high
- Hardness too high.
- Extremely small particles in pool water caused by storm or pool flooding
- Poor circulation in certain areas
- Excessive dissolved solids in water

### Scale Formation on equipment and pool walls

- pH too high
- total Alkalinity too high
- Dissolved calcium too high



### Excessive Chlorine usage

- Pool water not stabilized
- Dirty lint strainer or skimmer basket
- Overhanging trees
- pH out of balance

### Eye or Skin Irritation or chlorine odour

- pH out of balance
- Combined chlorine in water

### Corrosion of metal parts, pitting of concrete, rust specks on walls.

pH too low

### Erratic pH

Low Total Alkalinity

### Stains or coloured water

Metals in water.

### Visible Green Algae

Lack of Chlorine addition

### Black Algae Spots

Lack of Chlorine addition

### High Chlorine reading on OTO Test and water still cloudy.

- Total Chlorine being read
- OTO test solution faulty



# Common Pool Problems - Their Cause and Remedy

## Solution



Treat daily with shock treatment as per instructed dosage until combined chlorine is eliminated.

Add pH Down until pH level reads 7.2 - 7.6.

Add dry or liquid acid as per Dealer's instructions. Adjust to 80-150 ppm

If hardness is above 500, circulate the water through a portable water softener and then add Metasol. Adjust to 150-280 ppm.

Add filter aid as instructed. In extreme cases a "floc" will be necessary.

Check the skimmer valve setting drawing water from the surface and bottom drain. Adjust setting of return nozzle downward.

Solids build up in water used year after year. Backwash at the rate of 1% per day.

Add pH Down as per instructions on label. Do not use unstabilized Chlorine.

Add acid as per instructions on label.

Add Stabilizer. Adjust to minimum of 30 ppm.

Clean lint strainer or skimmer basket.

Cut back trees.

Test and adjust alkalinity. Adjust pH to 7.2 - 7.6.

Adjust pH to 7.2 - 7.6.

Shock your pool with Pool Shock or Oxy-Out.

Adjust pH to 7.2 - 7.6.

Test Alkalinity . Add Alka Plus.



"Floc" the water to remove metal stains. If stains are accessible, they can be removed by applying pH Down to the stained area. Add Metasol to the pool water.

Superchlorinate with Pool Shock Daily and add a Poly Algacide.

Black Algae spots can be eliminated by putting a 90% available chlorine tablet in a soft cloth bag and lowering the bag on a string until it is near the spots. Brush the spots at intervals until they disappear. Add an Algacide that destroys black algae.

Test water using the DPD Tablet test which will give the amount of "Free" and combined chlorine. If combined chlorine is found, shock your pool.

Both OTO and Phenol Red test solutions should be replaced each year.

# GLOSSARY

## **Algae**

Tiny aquatic growing plants (some free-floating, others cling to walls) which discolour water. Can be green, blue, black, red or mustard colour. Some are more resistant to chemicals than others.

## **Algaecide**

Chemicals which are used to kill algae growth or prevent them from forming.

## **Balanced Water**

A term used for the correct ratio of mineral content and the pH level that prevents corrosive or scale forming water.

## **Chlorine**

The most commonly used sanitizing agent for swimming pools.

## **Chloramines (combined chlorine)**

Compounds form when chlorine combines with urine, perspiration and skin proteins. This form of chlorine causes eye and skin irritation, as well as unpleasant odours.

## **Chlorine Demand**

The amount of chlorine used to "burn-out" or oxidize dissolved organic matter in the water. The chlorine demand must be satisfied in order to have "free-chlorine" available to sanitize any new contaminant entering the pool.

## **Chlorine Residual (free-chlorine)**

The chlorine level in the water after the chlorine demand has been satisfied. The "free-chlorine" residual is the true measure of potential chlorine disinfection.

## **DPD**

An accurate testing method used to indicate free-chlorine, combined or total chlorine.

## **Hardness**

The amount of calcium or magnesium dissolved in the water. High levels contribute to scale deposits.

## **Hypochlorous Acid**

The active form of chlorine in water. It is the "free-chlorine" which performs the sanitizing and oxidizing in the water.

## **Nitrogen**

An element introduced into the pool by perspiration, urine and skin protein. It reduces the effectiveness of chlorine, and stimulates algae growth. Forms eye irritating chloramines.

## **OTO (Orthotolidine)**

An indicator solution used to measure chlorine residual.

## **pH**

An index to measure the acidic or basic nature of water. A reading below 7 is acidic, and above 7 is basic. The ideal range for swimming pool water is 7.2 -7.6. Improper pH affects chlorine, chlorine's germ killing power and causes swimming discomfort.

## **Phenol Red**

The indicator solution which measures the pH.

## **Quat**

The short form for a quaternary ammonium compound (algaecide).

## **Scale**

"Sandpaper like" calcium bearing deposits that can coat pool walls and clog pipes, filters and heaters. Generally caused by high mineral content combined with high pH.

## **Sequestering Agent**

Prevents dissolved metals contained in the water from staining the pool and/or discolouring pool water. Controls scale formation.

## **Stabilizer (Cyanuric Acid)**

A granular chemical which protects chlorine from the ultra violet rays of the sun.

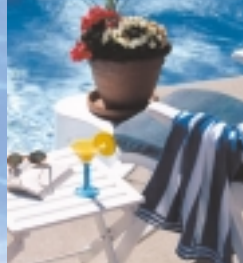
## **Shock Treatment**

The practice of adding an oxidizer in the form of super-chlorination or non-chlorinating treatment. Its purpose is to burn out organic matter built-up in the water after heavy bathing loads or a rainfall.

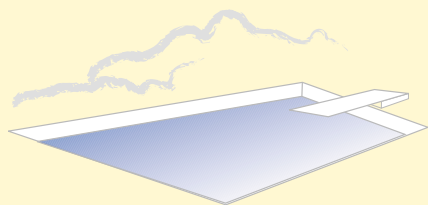
## **Total Alkalinity**

The amount of carbonates, bicarbonates and hydroxides in the pool. Total Alkalinity (TA) that is too high causes pH to resist adjustment to the desired range. TA that is too low causes pH to be unstable and difficult to maintain within the desired range.

# Estimating Pool Capacity



To properly control your pool water capacity.  
Follow the chart below to calculate the  
total gallons or total litres of your pool.

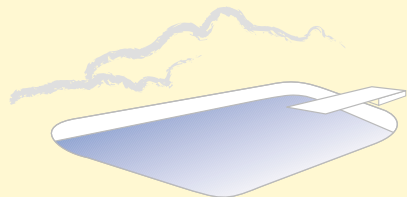


$$\begin{aligned} & \text{Length} \\ & \times \text{Width} \\ & \times \text{Average Depth} \\ & \times 7.5 \\ & \hline & = \text{gallons of water}^* \end{aligned}$$

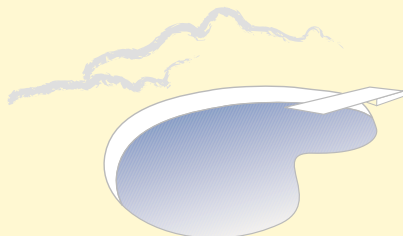
*\*Note: If pool has sloping sides, multiply total gallons by 0.85.*



$$\begin{aligned} & \text{Diameter} \\ & \times \text{Diameter} \\ & \times \text{Average Depth} \\ & \times 5.9 \\ & \hline & = \text{gallons of water}^* \end{aligned}$$



$$\begin{aligned} & \text{Maximum Length} \\ & \times \text{Maximum Width} \\ & \times \text{Average Depth} \\ & \times 5.9 \\ & \hline & = \text{gallons of water}^* \end{aligned}$$



Get actual figure from your pool builder or check your water meter before and after filling as a close estimate.

4.51 Litres = 1 Gallon