TABEX™

A pool owner's guide to easier sanitation and maintenance.

Pool Care Made Simple

www.tabex.com
Now that you have invested in a swimming pool, you must invest some time to understand the principles behind proper pool maintenance.

This TABEX® Pool Care Guide is specifically designed to help you minimize your costs through proper pool maintenance.

By following the information in this booklet, the TABEX® Quick Reference Swimming Pool Care Card and TABEX® Troubleshooting Guide, your water should remain sparkling, pure and inviting.

The chain of TABEX® dealers is dedicated to supplying the very best available pool chemicals and advice to help you reach your goal of proper pool maintenance.
Know your local dealer.

These are trained professionals ready to assist you in all of your pool care needs. They have the latest in testing equipment to analyze your pool water and provide you with a personalized prescription of proper water maintenance. Bring a sample of your pool water in a TABEX® Sample Bottle and allow your TABEX® dealer to get you started on the right foot, utilizing the TABEX® Treatment Program.

An Overview of the Swimming Pool Environment

Swimming pool water is in a closed system and lacks the natural purifying agents of natural water. A mountain stream is aerated and is constantly being flushed with fresh water from rain or snow run-off. Pool water lacks any such natural cleansing mechanism.

Without treatment, pool water will quickly become unsuitable for swimming. The water will become cloudy, due to dust and other contaminants from the surrounding environment and from the bather load. Bather load is defined as the bacteria, oils, greases, cosmetics, and other products deposited in the pool by bathers. Such deposits are classified as organics — meaning debris from living things. A high level of organics will cause the pool to become cloudy and listless.

Along with these issues, there is also algae, which will quickly bloom in an untreated pool. Obviously, some form of treatment is necessary to keep all these pool contaminants under control.

There are essentially three areas of discipline in pool maintenance, all working in conjunction with each other:

- Filtration
- Circulation
- Water Chemistry

Filtration is the removal of suspended particles from pool water. Such particles are comprised of dirt, bather load organics and other suspended material and can cause the pool to become turbid, or cloudy. Cloudy water, which is not inviting, is unsafe as you cannot see bathers under the water. Sand is the most common type of pool filter medium. To clean the filter, it is periodically backwashed, that is, reversing the flow of water through the filter to flush out accumulated debris to the drain.
Circulation is the movement of water by the pool pump from the pool, through the filter, back to the pool. Each time a volume of water equivalent to the pool capacity is put through the filter it is known as a turnover. The more frequent the turnover – the better the water quality.

Water Chemistry is dealing with the chemical changes in the water. About 90 per cent of all pool problems arise due to faulty water chemistry. This is because the chemistry of the pool is constantly changing. Rain, hot spells, heavy bather loads (pool parties) and the addition of pool chemicals all change the water chemistry.

All three disciplines of pool maintenance are dependant on each other. For example, water chemistry problems cannot be solved by circulation or filtration, while the latter cannot be solved by water chemistry. Keep your filter and pool pumps well serviced, thereby eliminating these factors as causes of any pool problems that may arise.

Understanding pool chemistry becomes easy if it is divided into three areas:

- Water balance
- Sanitation
- Specialty Chemicals

**Water Balance**

I. INTRODUCTION

Water Balance deals with the tendency of water to corrode or scale. Water Balance tells us one of three things:

- **Is the water scaling...?** This means does the pool water deposit a crusty, white substance called calcium carbonate or scale. This is the same as the deposit one sees at the bottom of a kettle used to boil water. Scale formation can form abrasive deposits on pool surfaces, plug filter sand, reduce circulation (by depositing scale inside piping) and cause cloudy pools. Allowing a scaling water condition to continue does irreparable damage to pool surfaces and equipment.

- **Is the water corrosive...?** In the pool environment corrosion can result in pitted concrete surfaces, dissolved copper elements inside the pool heater or pinholes in metal filters and piping. Rust is an example of corrosion of steel. The only way to correct corroded equipment or pool surfaces is by replacement, a very expensive proposition.

- **Is the water balanced...?** Balanced water is neither scaling nor corrosive and does not damage pool equipment or surfaces. Obviously, our objective is to have Balanced Water!

There are three main factors or parameters which determine if water is balanced or not. They are pH, Total Alkalinity and Calcium Hardness. Let’s examine each of these components.
II. pH – IDEAL RANGE: 7.2-7.6

The term pH is used to tell how acidic or alkaline a given sample of water may be. It ranges from 0-14, although such extremes as 0 (very acidic) or 14 (very alkaline) are rarely experienced with swimming pool water. pH 7 is neutral.

The pH range for swimming pools is usually 7.2-7.6, slightly on the alkaline side. A low pH indicates probability of corrosion; a high pH indicates a probability of scaling. pH should be tested daily. Use TABEX® pH Up or TABEX® pH Down as directed to bring the pH into the proper range.

III. TOTAL ALKALINITY – IDEAL RANGE: 80-120 ppm

Note: ppm means parts per million and is a unit of concentration used throughout pool chemistry. Swimming pool test kits measure in parts per million.

Total Alkalinity is a measure of the amount of alkaline salts in pool water. It is a very important contributor to proper pool chemistry, being a buffer or governor of pH. Water that has a low total alkalinity cannot ‘hold’ pH values and the pool owner will find the pH of their water changing very quickly. Whereas, if the total alkalinity is in the proper range, the pH will hold steady and fluctuations will be minimal. At very high total alkalinity levels the pH of the pool water will drift to higher levels leading to scaling water. In addition, high pH values lower the effectiveness of chlorine, clearly not a desired situation.

Over and above the important factor of pH control, total alkalinity is a major factor in water balance. Water with low total alkalinity tends to corrode and with high values tends to scale. Undoubtedly, the proper range for total alkalinity must be maintained for proper pool chemistry.

To increase total alkalinity use TABEX® Total Alkalinity Up and add the proper amount of this alkaline salt. Unfortunately, the lowering of total alkalinity is not accomplished so easily. Lowering total alkalinity requires the use of Muratic Acid and should be conducted under the direction of your local TABEX® dealer.
IV. CALCIUM HARDNESS – IDEAL RANGE: 200-240 ppm

Low calcium-bearing waters (soft water) do serious damage to concrete pool surfaces, leaching the calcium from the concrete. At the other extreme, very high calcium levels increase the probability of scale formation, namely the deposit of calcium carbonate.

A proper level of calcium in the water is therefore essential to properly balance pool water. (Note: Ideal calcium levels for pools are higher than spas due to the tendency of hot water to scale.)

Use TABEX® Calcium Hardness Increaser to raise calcium levels to the proper range. Excessive levels of calcium can be reduced by dilution with water of lower calcium hardness or controlled by use of TABEX® Pool Secure.

V. CONCLUSION

If all three factors, pH, total alkalinity and calcium hardness are in the proper ranges, your pool water is balanced. If the factors are above the prescribed values, scaling will occur; if below, corrosion will occur.

It is not the intent of this booklet to make pool owners highly-trained water chemists, but to make you aware of the importance of balanced water. Your local TABEX® dealer knows how to help you balance your pool water. They have the proper testing equipment to measure all the water balance parameters and tell you which chemicals to add, how much to add and in what order.

Balancing water is a relatively easy task and any adjustment chemicals required are quite inexpensive. A few dollars of prevention could save many dollars of repairs! Bring a sample of water into your local TABEX® dealer, they can save you time and money.
A sanitizer is a chemical agent which reduces the level of microorganisms in a pool by significant numbers, usually 99 per cent or more to safe levels as established by local Health Authorities. **SANITATION** is the science of obtaining a safe environment.

**I. INTRODUCTION**

The most commonly used swimming pool sanitizer is chlorine. While the name may conjure images of danger, as most people think of chlorine gas, gas is not sold to the public for backyard pools. Most pool chlorine products are white granular chemicals and if handled with care, present no danger to the pool owner or environment.

**II. WHAT DOES CHLORINE DO?**

Chlorine has the ability to kill and control bacteria and algae introduced into pool water by the bather, windborne debris and fill water. In the presence of 1-2 ppm chlorine, pool water is sanitized and algae seldom grows.

Chlorine is also an oxidizing agent and will attack and reduce the level of organic materials introduced into the pool water by the bather. This oxidation, or cleansing of the pool, is necessary. Without it, the pool water will cloud and become a haven for bacterial growth. Such pools invite the spread of infections such as swimmer's ear and pink eye.

**III. NON-CHLORINE OXIDIZERS**

Chlorine is not the only chemical oxidizer. There are non-chlorine oxidizing products available for swimming pool water. High levels of chlorine applied to pool water (superchlorination) have an enhanced ability to cleanse the pool of organics, but leave the pool out of bounds to bathers until the high residual of chlorine has dissipated. High levels of chlorine have the ability to bleach bathing suits and, in some cases, cause the bather’s skin to take on a chlorine-like odour. Non-chlorine oxidizers possess neither of these objectionable properties, and one is able to use the pool without an extended waiting period.

*Note: 70-90 per cent of all chlorine added to a pool performs as an oxidizer. Only 10-30 per cent sanitizes. Therefore the addition of a non-chlorine oxidizer greatly reduces the amount of chlorine required to maintain a proper residual.*

**IV. CHLORINE CONSUMPTION: MAINTAIN CHLORINE LEVELS AT 1-2 ppm**

When chlorine does its work of killing bacteria and oxidizing organics it is consumed. Thus, it is necessary to constantly add chlorine to maintain the proper chlorine residual. The lack of chlorine maintenance is a major cause of pool water problems.
V. SUNLIGHT DESTRUCTION OF CHLORINE: STABILIZE POOL WATER: 30-50 ppm

Apart from sanitizing and oxidizing, there is another cause of chlorine consumption. When the weather is bright and sunny, the ultraviolet rays from the sun will destroy the chlorine in the water. It is very difficult to maintain the proper chlorine residual throughout the day as up to 90 per cent of the chlorine can be lost in two hours!

Such destruction is greatly reduced by stabilizing your pool. The addition of TABEX® Stabilizer at the proper dosages will extend the life of the chlorine residual three to five times. Stabilizer is cyanuric acid and is a stable, yet very weak acid. Cyanuric acid is not destroyed by any other pool chemical and is only lost through pool water removal. For an indoor pool that is not subjected to the sun, the need for stabilization does not exist. For outdoor pools, stabilization is required.

“If one kilogram is good, then three would be fantastic!” Such an adage does not hold for stabilization of pool water. If you increase the level of stabilizer to levels over 60 ppm, there is a risk of overstabilization. Such high concentrations of stabilizer cause chlorine to function at a reduced capacity. Such an over stabilized pool is recognized as being green with algae, while possessing substantial chlorine levels. The only solution to overstabilization is to drain the pool and refill with fresh water, thereby reducing the stabilizer concentration to proper levels, through dilution. This will enable the chlorine to resume functioning properly. Your local TABEX® dealer can advise you on the proper levels for your area.

VI. LOTS OF POOL CHLORINE PRODUCTS

Once a pool is stabilized the level of cyanuric acid is constantly depleted by water loss. Backwashing the filter results in pumping water to drain and bather splash out also results in water loss from the pool. Refilling the pool with fresh water that contains no stabilizer further dilutes stabilizer concentrations. This problem was addressed with the advent of stabilized chlorines.

Stabilized chlorines are sanitizers that contain the cyanuric acid as part of their chemical make up. When dissolved in pool water such sanitizers add both chlorine and cyanuric acid to the pool. There are two types of stabilized chlorine.

Slow dissolving stabilized chlorinating tablets are the most popular stabilized chlorines. Their ability to slowly dissolve over time creates the convenience of a constant feed of chlorine into the pool via an erosion feeder device. Your TABEX® dealer offers different sizes of chlorinating tablets for your convenience and preference... TABEX® Tablets (20 g tablets) and TABEX® Pucks (200 g tablets).

Fast dissolving stabilizing chlorinating granules are added to the pool manually, as they dissolve too fast to be used in erosion feeder devices. The fast dissolving property of these granules is useful in the chlorination of above-ground pools, whose volumes exclude a substantial reservoir of chlorine. Adding a quantity of TABEX® Chlorinating Granules will instantly increase the level of chlorine to be able to handle the sudden bather loads experienced by the smaller above-
ground pool. Do not use TABEX® Chlorinating Granules for superchlorination of indoor and outdoor pools as this will result in the establishment of high levels of stabilizer in the pool and the risk of overstabilization.

Unstabilized chlorines are pool chlorine products that contain no stabilizer. Because there is no stabilizer content, unstabilized chlorines are the least expensive of the pool water sanitizers. TABEX® Blast is an unstabilized granular chlorine and is ideal for chlorination of indoor pools where the presence of stabilizer serves no purpose. TABEX® Blast can also be used for superchlorination of outdoor and indoor pools. Containing no stabilizer, superchlorinating outdoor pools will not cause overstabilization.

New technology allows for the formation of chlorine in the pool through the electrolysis of salt water. The swimming pool is the bank of salt water used in the process. Talk to your TABEX® dealer about the Lectranator® Cubby, Lectranator® Digital and Lectranator® Soft Touch salt water electrolysis systems to determine what may be best for your swimming pool.

VII. SHOCK TREATMENT

Periodically, pool water needs some help keeping up with the organic load it has to handle. Rain, wind storms, hot spells and sudden heavy bather loads, all place extra stress on pool water quality. In such cases the application of a high level of oxidizer will reduce the organic load in the pool. TABEX® Shock ‘n Swim is a non-chlorine oxidizer that will burn off oils, grease and other contaminants. By eliminating these products, the pool can return to its original, inviting sparkle. Shocking with TABEX® Shock ‘n Swim, rather than superchlorinating, allows bathers to swim within 20 minutes after treatment.
SPECIALTY CHEMICALS

Specialty chemicals are employed to handle distinct problems which may periodically appear: algae formation, staining, cloudy pool water. Water testing and general housekeeping fall into this category. Let's discuss each of these distinct issues.

I. STAINING

Staining is caused by the deposit of coloured metal salts on the floor and wall surfaces of the pool. Such stains are from a group of chemical elements called heavy metals, of which iron, copper and manganese are the main culprits. Iron stains are rust in colour, copper stains are blue-green or black and manganese stains are grey or brown. Iron and manganese usually come from ground water used to fill the pool. Manganese staining is quite rare. Iron staining, in addition to being caused by ground water, can also be due to corrosion of steel pool equipment. Copper stains generally come from corrosion of the copper pool equipment. TABEX® Pool Secure is a concentrated liquid sequestering agent which will prevent corrosion, metal stains, and calcium scale.

For existing stains, TABEX® Ultra Pool Secure is a heavy duty sequestering agent which lifts metal stains from vinyl, tile and acrylic surfaces. Due to its porous surface, concrete stains usually require an acid wash to remove discolourations.

II. ALGAE CONTROL

Algae can manifest in several forms. Floating green algae is the most common. Wall clinging species, such as black and mustard algae are also bothersome growths. The key to algae control is prevention. A maintenance level of TABEX® Algy.solve 2250 will act as a backup, or an insurance policy, to assist chlorination. The presence of this algaecide will also prevent algae blooms even in the absence of chlorine. If algae is already present, use TABEX® Algy.solve, a maximum strength, concentrated algaecide, as directed to kill the infestation.

III. CLOUDY WATER

Although it has been stated that cloudy water can be clarified by a good shock treatment, in some cases the water still remains turbid. This is due to finely suspended particles of dirt, clay, or other products that cannot be further oxidized and are so small as to pass through the filter. Here TABEX® Clear-It is used. This product is a long chain molecule which literally gathers up or coagulates these fine particles into a filterable mass. Use of this clarifier will give pool water that extra polished look, and should result in sparkling, inviting water.
IV. POOL HOUSEKEEPING

As with every home, the swimming pool environment requires cleaning. Several cleaning products are available for special cleaning functions. Never employ household ammonia cleaners around the pool, due to incompatibility of pool sanitizers with ammonia. TABEX® Grime-Away is a heavy duty cleaner used to remove grime, dirt and scale from vinyl, tile, concrete, and fiberglass surfaces. TABEX® Tile & Vinyl Cleaner is a general all purpose pool cleaner with a spray applicator and is excellent for removing the water-line mark, light oils and dirt from pool surfaces.

A special area to clean is the sand filter. After prolonged usage, sand filter media can become saturated with grease, oils, scale and other contaminants. TABEX® Filter Flo is used to clean filter sand or diatomite elements by removing rust, oils, grease, etc.

TABEX® Lectra Clean is specifically formulated to clean salt chlorine generator cells. It is a non-fuming and ready to use product which quickly removes scale, body oils, and other organic debris from the cell blades.

V. TESTING KITS

Most pool owners have an aversion to becoming backyard chemists. You have probably purchased a simple test kit that measures only pH and chlorine. That’s fine! These are the two most important chemical parameters, which usually change daily and require adjustment. Utilize your test kit to tell you when to add the pool chemical needed to keep the pH in the range of 7.2-7.6 and the chlorine in the range of 1-2 ppm. At least once a month, or when you need pool supplies, take a sample of pool water into your local TABEX® dealer. They will advise you of any chemical adjustments required to keep your pool water balanced or to solve any pool water problems that might have arisen.

VI. SIZING YOUR POOL

All chemical dosage quantities recommended for proper pool water maintenance depend on knowing the volume of water in your pool. An error in the stated pool volume results in error in all chemical maintenance programs. As most backyard pool sizes are still specified by feet, the pool volume calculations will be in total US gallons. Taking this calculated amount and multiplying by 3.8 will yield the pool volume in litres.

<table>
<thead>
<tr>
<th>RECTANGULAR</th>
<th>OVAL/CIRCULAR</th>
<th>IRREGULAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>length x width</td>
<td>π (3.14) x R²</td>
<td>No special formula – obtain estimate from your pool builder.</td>
</tr>
<tr>
<td>average depth x</td>
<td>x average depth x</td>
<td></td>
</tr>
<tr>
<td>7.5 = volume</td>
<td>7.5 = volume</td>
<td></td>
</tr>
</tbody>
</table>

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Let's review the initial treatment in pool water maintenance.

1. Have the water balanced by your local TABEX® dealer. They will make sure your pH, total alkalinity and calcium hardness are within their proper respective ranges.

2. Add initial dosage of TABEX® Pool Secure to prevent staining of swimming pool surfaces.

3. Shock treat your pool with TABEX® Shock ‘n Swim to initially cleanse the swimming pool water of oxidizable materials or organics.

4. Stabilize outdoor swimming pool water with TABEX® Stabilizer to a minimum of 30 ppm.

5. Add initial dosage of TABEX® Algy Solve 2250 per label directions.


A FINAL WORD: HANDLING OF POOL CHEMICALS

- Keep all pool chemicals out of reach of children.
- Chlorine chemicals are strong oxidizing agents and may cause fire or explosion if contaminated.
- Keep chemical containers closed and in a cool, dry location.
- Never mix pool chemicals.
- Always add chemicals to water. Never water to chemicals.
- Most pool chemicals are harmful if swallowed or if in contact with skin or eyes. If splashed in eyes or on skin, flush thoroughly with water for 15 minutes. If swallowed contact a physician immediately.
- Rinse empty containers thoroughly before discarding. Do not reuse.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid Demand:</td>
<td>Acid required to neutralize alkaline water to bring pH into the proper range.</td>
</tr>
<tr>
<td>Acid Water:</td>
<td>Water with pH below 7.0.</td>
</tr>
<tr>
<td>Active Strength:</td>
<td>Weight percentage of actual sanitizer in commercially packaged pool chlorine.</td>
</tr>
<tr>
<td>Algae:</td>
<td>Single-celled plant microorganism too small to be seen by the naked eye. Spores or seeds are continuously being introduced into the pool by winds, storms, and rain. Pools contaminated by algae are usually unsanitary.</td>
</tr>
<tr>
<td>Available Chlorine:</td>
<td>A measure of the relative strength of chlorine products.</td>
</tr>
<tr>
<td>Alkaline Water:</td>
<td>Water with pH above 7.0.</td>
</tr>
<tr>
<td>Bacteria:</td>
<td>Microorganisms introduced into the pool by bathers, dust, rain, or wind. Most are harmless, but some are disease-causing. Pathogens or germs are killed by pool sanitizers such as chlorine.</td>
</tr>
<tr>
<td>Buffer:</td>
<td>Presence of alkaline salts or total alkalinity which prevent large changes in pH.</td>
</tr>
<tr>
<td>Calcium Hardness:</td>
<td>Level of dissolved calcium salt in pool water. Excess calcium can cause scale formation, deficiency of calcium can cause etching of concrete surfaces.</td>
</tr>
<tr>
<td>Chlorine:</td>
<td>Strong oxidizing agent and sanitizer. Available in stabilized or unstabilized products.</td>
</tr>
<tr>
<td>Chlorine Demand:</td>
<td>The amount of chlorine required to satisfy the organic load of a given pool before an unreacted chlorine residual remains.</td>
</tr>
<tr>
<td>Chlorine Residual:</td>
<td>Chlorine that is available to kill or oxidize any bacteria or organic pool contaminant introduced into pool water.</td>
</tr>
<tr>
<td>Corrosion:</td>
<td>Destruction of concrete and/or metals by acidic water.</td>
</tr>
<tr>
<td>OTO:</td>
<td>Testing reagent used in kits to measure the level of chlorine in pool water.</td>
</tr>
<tr>
<td>PPM:</td>
<td>Parts Per Million. A unit of concentration used in pool water chemistry. It means one part of chemical in a million parts of water. Example: ‘1 ppm’ is one gram of chemical in one million grams of water.</td>
</tr>
</tbody>
</table>
**pH:** Measure of acidity or alkalinity of water. Measurement runs from 0 to 14 with 7.0 being neutral. Waters with pH lower than 7.0 are acidic, those above 7.0 are alkaline.

**Phenol Red:** A red dye used to determine the pH of water.

**Scale:** Jagged, white deposits of calcium carbonate. Scale is produced when water is out of balance.

**Stabilizer:** Also known as cyanuric acid. Serves one function to protect chlorine residuals from destruction by the ultraviolet rays of the sun. Cyanuric acid is not destroyed by any other pool chemicals.

**Shock Treatment:** Addition of non-chlorine oxidizer to water for the purpose of oxidizing pool organics. Restores water to natural sparkle. Bathers are able to swim immediately after treatment.

**Super Chlorination:** The addition of a heavy dose of chlorine for the purpose of oxidizing accumulated organics.

**Total Alkalinity:** Concentration of alkaline salts in swimming pool water. Governor of pH and one of three factors determining water balance.

**Turbidity:** Cloudiness.
**PERSONAL POOL DATA**

**POOL:**
Volume (litres):
Finish:
Date Built:
Builder:

**FILTER:**
Type:
Make:
Model:
Backwash:

**PUMP:**
Make:
Model:
Horsepower:
Flow Rate:

**HEATER:**
Type:
Make:
Model:

**AUTOMATIC CHLORINATOR:**
Make:
Model:

**AUTOMATIC CLEANER:**
Make:
Model:

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