4 IN 1 TEST KIT INSTRUCTIONS

A basic understanding of water chemistry and the reasons for testing your pool water has become a practical necessity for the pool owner. This test kit is an important tool for the proper care of your pool or spa. It is designed to help you maintain the necessary hygienic conditions of the water. Also it helps prevent water problems that can cause damage to your pool, spa and related equipment.

TIPS

- Keep the test kit in a cool, dark space.
- Replace test solutions at the start of each season.
- Keep test solutions out of reach of children.

CALCULATING POOL OR SPA WATER CAPACITY

When determining the amount of chemicals to add to your water it is important to know the capacity of your pool or spa. Use one of the following formulas to calculate your pool volume.

Circular pool (m) Diameter x diameter x average depth x 831= Total litres

Oval shape (m) Length x width x average depth x 831= Total litres

Rectangular form (m) length x width x average depth x 100=Total litres

For freeform pools a combination may have to be used to determine total litres

For U.S. conversion (Using feet for dimensions) substitute 5.9 for 831 and 7.5 for 1000 to convert to gallons.

GLOSSARY OF TERMS

Acid/pH decreaser - a chemical used to lower the pH of the water

Acid demand -After testing water indicates how much acid should be added.

Total alkalinity -The measure of resistance in change to pH.

Free Chlorine-The active chlorine in the water capable of destroying contaminants.

Chlorine-A chemical disinfectant used to control algae and bacteria.

PH-The measure of acid activity in the water.

Cynuric acid-Used to prevent the breakdown of hypochlorous acid by UV light.

PPM-Abbreviation for parts per million.

Soda Ash-Chemical used to raise the pH and total alkalinity.

CHLORINE/BROMIINE

Chlorine and Bromine-are disinfectants used to combat bacteria and algae problems.

Chlorine/Bromine demand-refers to the quantity of each consumed during the process of destroying bacteria, algae and oxidisable materials in the pool water. The demand changes due to usage of pool, weather and the pH.

Chlorine/Bromine residual-is the terminology for the amount of disinfectant in your pool at the time of testing. Chlorine residual is a combination of free chlorine and combined chlorine.

Free Chlorine-is the full strength of chemical available in the water to actively destroy incoming bacteria and algae. If the water has no Free Chlorine, then the only chlorine in the water is Combined Chlorine.

Combined Chlorine, also known as chloramines, is an ineffective form that develops when chlorine combines with other contaminants in the water. It is only 6.6% of the strength of Free Chlorine and has virtually no action as a disinfectant or algae control.

CHLORINE/BROMINE

SUPERCHLORINATION AND SHOCK TREATMENT

Taking into account the type of weather, eg. Dust storms etc, the amount of pool usage, it is advisable that you "Shock Treat" your pool from time to time.
This is accomplished by adding an extra large dosage of chlorine or non-chlorine shock treatment chemical to the water.
Super chlorination will prevent pool usage for a period of time, whereas shock treatment will not.

STALILISER

This is a chemical that when added to the water, will act like a pool blanket or shield.
The sun tends to increase the dissipation of chlorine, and stabiliser will slow this action down.

pH

pH is the percentage of acid to alkaline content in the water of your pool/spa.
pH changes with rain, dust, pool usage and when topping up the pool water.
These percentages can be determined by testing using a test kit. Using the results of your test kit, adjustments can then be made to correctly balance the water by the addition of chemicals. It is important however that before any adjustments are made, that you know the volume of your pool/spa.

Pool/spa water can either be acidic or alkaline; the measure of alkaline materials will vary by geographical location. A high pH in the water will produce,

1. A scale or hard deposit on pool walls, heating systems and filtration system.
2. Prevent disinfectants from destroying bacteria and algae.

Adding acid in a proportional manner can reduce the waters alkaline content.
If acid is not added in a controlled amount the pH could be lowered and the result would be,

1. Nose and eye irritation.
2. Etching of plaster or liner finishes of the pool/spa.
3. Metal corrosion of ladders and filtration.
4. Rapid dissipation of disinfectants.

pH

Acid is used to counteract a high pH, and soda ash or sodium bicarbonate for a low pH condition.

MEASUREMENT OF pH
High acid =0
High alkaline=14
This means that a pH of 7 would be neutral. For your pool however, a reading of between 7.4 and 7.6 is considered "In Balance".

PH related chemicals should not be added to the pool/spa water at the same time as disinfectants related chemicals.

TOTAL ALKALINITY

An incorrect level of total alkalinity can also cause a change or fluctuation in the pH. If it is high, the pH will "Bounce" up to quickly and if it is low, the pH can quickly drop to a low pH or corrosive state. The recommended range is 80-120 mg/L for plaster finishes and 120-140 mg/L for vinyl, painted or fibreglass pools.

CORRECT TESTING PROCEDURES

Accurate and reliable testing is easy ton achieve. Here is a list of reminders to ensure your testing is consistent, maintaining a high level of accuracy.

- Follow the manufacturers instructions.
- Pay special attention to the amounts of reagent to be used in tests.
- Rinse all equipment between tests.
- Be aware of the shelf life of the reagents. It is best to replace all reagents at the start of the swimming season.
- Natural lighting is the most accurate environment for colour matching.
- When performing drop tests hold the bottle vertically and swirl the test vial between drops.

TESTING INSTRUCTIONS

CHLORINE/BROMINE TEST DPD METHOD

1. Fill CL tube to the mark with pool or spa water.

2. Drop one DPD tablet into tube (Avoid touching the tablet)

3. Place cap on tube and shake until the tablet dissolves.

4. Free Chlorine Reading
Compare tube color with adjacent color standard

5. Bromine Reading
Compare color in vial with bromine standards and determine TOTAL Active Bromine.

pH TEST

1. Fill large tube to pH mark with pool or spa water.

2. Add 1 drop of solution #4, and swirl to mix.

3. Add 5 drops of solution #2, and swirl to mix.

4. Compare the tube color with the adjacent color standard to obtain the pH reading.

NOTE:
Should the pH reading exceed 7.6, save the test sample and proceed to the Acid Demand Test.

ACID DEMAND TEST

1. Using **water sample** from pH test, add **solution #3** ,one drop at a time, swirling between drops.

2. Count drops needed to change color to nearly match pH color standards. Do not count drops which give a 7.2 reading or below.

3. Using the number of drops needed, refer to the acid demand chart in the test kit to determine the quantity of liquid acid required.

NOTE:
A. Never add acid and chlorine at the same time
B. Add acid with filter running.

TOTAL ALKALINITY TEST

1. Fill large tube to total alkalinity with pool or spa water.
2. Add I drop of solution #4 and swirl to mix.
3. Add 2 drops of solution #5 and swirl to mix.
4. Add solution #3 one drop at a time, swirl between drops.
5. Count drops needed to change color from blue to clear.
6. Multiply the number of drops by 10 to obtain ppm (parts per million).

Ideal total alkalinity is 80-120 ppm for plaster finish pools or 120-150 ppm for vinyl, painted or fiberglass pools.
If your reading is less than desired, add sodium bicarbonate. If more than desired, acid is usually needed.

ACID DEMAND CHART–(METRIC)
LIQUID ACID/pH DECREASER REQUIREMENT

POOL CAPACITY IN LITRES	NUMBER OF DROPS OF SOLUTION #3									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1000	5ml	10ml	15ml	20ml	30ml	35ml	40ml	45ml	50ml	60ml
2000	10ml	20ml	30ml	40ml	60ml	70ml	80ml	90ml	100ml	120ml
4000	20ml	40ml	60ml	80ml	120ml	140ml	160ml	180ml	200ml	240ml
10000	50ml	100ml	50ml	200ml	300ml	350ml	400ml	450ml	500ml	600ml
20000	100ml	200ml	300ml	400ml	600ml	700ml	800ml	900ml	1Lt	1.2Lt
30000	150ml	300ml	450ml	600ml	900ml	1.05Lt	1.2Lt	1.35Lt	1.5Lt	1.8Lt
40000	200ml	400ml	600ml	800ml	1.2Lt	1.4Lt	1.6Lt	1.8Lt	2Lt	2.4Lt
50000	250ml	500ml	750ml	1Lt	1.5Lt	1.75Lt	2Lt	2.34Lt	2.5Lt	3Lt
60000	300ml	600ml	900ml	1.2Lt	1.8Lt	2Lt	2.4Lt	2.79Lt	3Lt	3.6Lt

ACID DEMAND CHART–(IMPERIAL)
LIQUID ACID/pH DECREASER REQUIREMENT

POOL CAPACITY IN LITRES

OZ=Ounce C=Cup p=Print Q=Quart G=Gallon 2Cups=1 Pint 2 Pints=1 Quart 4 Quarts=1 Gallon

NUMBER OF DROPS OF SOLUTION #3

	1	2	3	4	5	6	7	8	9	10
250	1/5oz	2/5oz	3/5oz	4/5oz	1oz	1 1/5oz	1 2/5oz	1 3/5oz	1 4/5oz	2oz
500	2/5oz	4/5oz	1 1/5oz	1 3/5oz	2oz	2 2/5oz	2 4/5oz	3 1/5oz	3 3/5oz	4oz
1000	4/5oz	1 3/5oz	2 2/5oz	3 1/5oz	4oz	4 4/5oz	5 3/5oz	6 2/5oz	7 1/5oz	8oz
2500	1/4C	1/2C	3/4C	1C	1 1/4C	1 1/2C	1 3/4C	2C	2 1/4C	2 1/2C
5000	1/2C	1C	1 1/2C	1P	2 1/2C	3C	3 1/2C	2P	2 1/4P	2 1/2P
10000	1C	1P	1 1/2P	1Q	2 1/2P	3P	3 1/2P	2Q	4 1/2P	2 1/2Q
15000	1 1/2C	1 1/2P	2 1/4P	3P	2Q	2 1/4Q	2 1/2Q	3Q	3 1/2Q	1G
20000	1P	1Q	3P	2Q	2 1/2Q	3Q	3 1/2Q	1G	4 1/2Q	1 1/4G
25000	1 1/4P	2 1/2P	2Q	2 1/2Q	3Q	1G	4 1/2Q	1 1/4G	1 1/2G	1 1/2G