



Analyzing Test Results
and Adjusting Pool Water



www.AquaChek.com/Trutest
1-888-AquaChek

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To keep your pool at its best, test at each end a minimum of twice a week, and test your spa before each use.

Free Chlorine – Ideal Reading: Pool 1.0 – 3.0 ppm; Spa 3.0 – 5.0 ppm

To maintain a clean and clear pool, keep the free chlorine level in the right range. Free chlorine is the portion of the total chlorine remaining in chlorinated water that has not reacted to contaminants – and is “free” to go to work to kill bacteria and other contaminants.

Shock Treatment – Contrary to popular belief, a strong chlorine smell is not an indication of too much chlorine in the pool but actually a red flag that a super dose of chlorine may be required to correct the problem. Shock treatment adds a larger-than-normal amount of oxidizing chemicals to pool water. The ideal frequency for a super dose is every week, depending on use and water temperature.

Bromine – Ideal Reading: 2.0 – 6.0 ppm

To obtain bromine result, multiply free chlorine value by 2.2. Bromine is a popular pool and spa sanitizer often used instead of chlorine. Environmental conditions (leaves, rain) and usage (how many folks are enjoying the pool or spa) will add contaminants in the water. Those contaminants will decrease the bromine existing in the water. Be sure to test the bromine before entering the water. Even if the system is dormant or not in use, you should test the bromine level at least weekly to prevent any buildup of bacteria or algae.

pH – Ideal Reading: 7.2 – 7.8

Losing control of pH in the water unleashes a whole series of problems. The pH can damage metal equipment and plaster walls if it gets out of balance. A swimmer’s body has a pH between 7.2 and 7.8 so, if the pool water isn’t kept in this range, swimmers will start to feel irritation of their eyes and skin. Finally, the pH must stay in the proper range to maximize the efficiency of chlorine.

If the pH is low, below 7.2, the water is too acidic and it can damage the piping and pool surfaces under certain conditions. You can use sodium carbonate (soda ash) to increase pH when levels are too low. Other chemicals that can raise the pH are sodium bicarbonate and sodium sesquicarbonate.

Above 7.8, the water is more alkaline (basic) and under certain conditions can form deposits in the piping and on pool surfaces. Sodium bisulfate and muriatic acid can lower the pH when it gets too high.

Total Alkalinity – *Ideal Reading: 80 – 120 ppm*

Total alkalinity is the measure of the water's ability to resist pH change. If the total alkalinity is low, the pH will fluctuate widely and be difficult to maintain. When total alkalinity is high, the pH can become difficult to move and the water can be scale forming.

Increasing Total Alkalinity – Sodium bicarbonate is the most effective and popular chemical for increasing total alkalinity. Other chemicals that can raise the total alkalinity are sodium carbonate (soda ash) and sodium sesquicarbonate.

Decreasing Total Alkalinity – When the total alkalinity is too high, you can lower it by using muriatic acid or sodium bisulfate.

See warnings for handling chemicals*

ppm=mg/L

Chlorination Chart – Pools (Amount Needed to Introduce 1 ppm) Tabla de Cloración – Piscinas (Cantidad necesaria para incorporar 1 ppm)				
Type of Chlorine	Pool Volume			
	5,000 gal. 19 kL	10,000 gal. 38 kL	15,000 gal. 57 kL	25,000 gal. 95 kL
Sodium Hypochlorite	5 1/2 oz. 163 mL	10 1/2 oz. 310 mL	1/2 qt. 473 mL	3/4 qt. 710 mL
Dichlor	1 oz. 28.3 g	2 1/4 oz. 63.8 g	3 1/4 oz. 92.1 g	5 1/2 oz. 149 g
Calcium Hypochlorite	1 oz. 28.3 g	2 oz. 56.7 g	3 oz. 85 g	5 oz. 142 g
Trichlor	3/4 oz. 21.2 g	1 1/2 oz. 42.5 g	2 1/4 oz. 63.8 g	3 3/4 oz. 106 g

Superchlorination Chart – Pools

(Amount Needed to Introduce 10 ppm)

Tabla de supercloración – Piscinas

(Cantidad necesaria para incorporar 10 ppm)

Type of Chlorine	Pool Volume			
	5,000 gal. 19 kL	10,000 gal. 38 kL	15,000 gal. 57 kL	25,000 gal. 95 kL
Sodium Hypochlorite	1 3/4 qts. 1.7 L	3 1/4 qts. 3.0 L	1 1/4 gal. 4.7 L	2 gal. 7.6 L
Dichlor	11 oz. 311 g	1 1/3 lbs. 605 g	2 lbs. 908 g	3 1/3 lbs. 1.5 kg
Calcium Hypochlorite	10 oz. 284 g	1 1/4 lbs. 568 g	2 lbs. 908 g	3 1/4 lbs. 1.5 kg

Chlorination Chart – Spas

(Amount Needed to Introduce 4 ppm)

Tabla de Cloración – Spa

(Cantidad necesaria para incorporar 4 ppm)

Type of Chlorine	Spa Volume	
	250 gal. 948 L	500 gal. 1.9 kL
Dichlor	1/4 oz. 7.0 g	1/2 oz. 14.2 g
Sodium Hypochlorite	1 oz. 29.6 mL	2 oz. 59.1 mL
Lithium Hypochlorite	1/2 oz. 14.2 g	1 oz. 28.3 g

Superchlorination Chart – Spas

(Amount Needed to Introduce 10 ppm)

Tabla de supercloración – Spa

(Cantidad necesaria para incorporar 10 ppm)

Type of Chlorine	Spa Volume	
	250 gal. 948 L	500 gal. 1.9 kL
Dichlor	2/3 oz. 18.9 g	1 1/4 oz. 35.1 g
Sodium Hypochlorite	2 1/2 oz. 74 mL	5 oz. 148 mL
Lithium Hypochlorite	1 oz. 28.3 g	2 oz. 56.7 g

Raising pH with Soda Ash (Sodium Carbonate)

(When pH is under 7.2, add the amount of soda ash indicated below, then retest)

Aumento de pH con carbonato sódico

(Cuando el pH es inferior a 7.2 agregue la cantidad de carbonato sódico indicada a continuación y repita la prueba)

pH Level	Pool Volume				
	1,000 gal. 3.8 kL	5,000 gal. 19 kL	10,000 gal. 38 kL	15,000 gal. 57 kL	25,000 gal. 95 kL
7.0 - 7.2	3/4 oz. 21.3 g	4 oz. 113 g	8 oz. 227 g	12 oz. 340 g	1 1/4 lbs. 568 g
6.7 - 7.0	1 1/4 oz. 35.4 g	6 oz. 170 g	12 oz. 340 g	1 lb. 454 g	2 lbs. 908 g
Under 6.7	1 1/2 oz. 42.5 g	8 oz. 227 g	1 lb. 454 g	1 1/2 lbs. 681 g	2 1/2 lbs. 1.1 kg

Chemical Application Charts

Lowering pH using Dry Acid (Sodium Bisulfate) <small>(When pH is over 7.8, add the amount of acid indicated below, then retest)</small> Disminución de pH con ácido seco (bisulfato de sodio) <small>(Cuando el pH es superior a 7.8 agregue la cantidad de ácido indicada a continuación y repita la prueba)</small>					
pH Level	Pool Volume				
	1,000 gal. 3.8 kL	5,000 gal. 19 kL	10,000 gal. 38 kL	15,000 gal. 57 kL	25,000 gal. 95 kL
7.8 - 8.0	0.1 lb. 45 g	0.3 lb. 136 g	0.6 lb. 272 g	0.9 lb. 408 g	1 1/2 lbs. 681 g
8.0 - 8.4	0.2 lb. 91 g	0.5 lb. 227 g	1 lb. 454 g	1 1/2 lbs. 681 g	2 1/2 lbs. 1.1 kg
Over 8.4	0.3 lb. 136 g	0.8 lb. 363 g	1 1/2 lbs. 681 g	2.3 lbs. 1 kg	4 lbs. 1.8 kg

Raising Alkalinity With Sodium Bicarbonate Aumento de la alcalinidad con bicarbonato de sodio					
Increase in Total Alkalinity in ppm	Pool Volume				
	1,000 gal. 3.8 kL	5,000 gal. 19 kL	10,000 gal. 38 kL	15,000 gal. 57 kL	25,000 gal. 95 kL
10	2 1/2 oz. 62 g	12 oz. 340 g	1 1/2 lbs. 681 g	2 1/4 lbs. 1 kg	3 3/4 lbs. 1.7 kg
20	4 3/4 oz. 135 g	1 1/2 lbs. 681 g	3 lbs. 1.4 kg	4 1/2 lbs. 2 kg	7 1/2 lbs. 3.4 kg
50	12 oz. 340 g	3 3/4 lbs. 1.7 kg	7 1/2 lbs. 3.4 kg	11 1/4 lbs. 5 kg	18 3/4 lbs. 8.5 kg

Lowering Alkalinity With Dry Acid (Sodium Bisulfate) Disminución de la alcalinidad con ácido seco (bisulfato de sodio)					
Decrease in Total Alkalinity in ppm	Pool Volume				
	1,000 gal. 3.8 kL	5,000 gal. 19 kL	10,000 gal. 38 kL	15,000 gal. 57 kL	25,000 gal. 95 kL
10	2 1/2 oz. 62 g	12 3/4 oz. 361 g	1 1/2 lbs. 681 g	2 1/2 lbs. 1.1 kg	4 lbs. 1.8 kg
20	5 oz. 142 g	1 1/2 lbs. 681 g	3 1/4 lbs. 1.5 kg	4 3/4 lbs. 2.2 kg	8 lbs. 3.6 kg
50	12 3/4 oz. 361 g	4 lbs. 1.8 kg	8 lbs. 3.6 kg	12 lbs. 5.4 kg	20 3/4 lbs. 9.4 kg

*WARNING: Exercise extreme caution when handling chemicals.

- Do not add chemicals when swimmers are in the water.
- Never store acids and chlorine compounds next to each other.
- Never mix chemicals together; add chemicals to the water one at a time.
- Handle acid very carefully.
- Wear protective eyewear and keep material away from children.
- Always follow the chemical manufacturer's directions.

Troubleshooting Guide

Optimal Levels

Test	Ideal Reading
Free Chlorine – Pool	1.0 - 3.0 ppm
Free Chlorine – Hot Tub	3.0 - 5.0 ppm
Bromine	2.0 - 6.0 ppm
pH	7.2 - 7.8
Total Alkalinity	80 - 120 ppm

If the problem is...

Algae

Possible Cause	Solution
Green, black or pink algae	Treat with algaecide or superchlorinate and backwash.
Yellow/mustard algae	Superchlorinate or treat with algaecide. Brush and vacuum required. Backwash filter.

Corrosion

Possible Cause	Solution
Low pH or hardness levels	Increase levels to balance water.
High salt or TDS concentrations	Add fresh water to dilute.
High chlorine or bromine levels for extended period of time	Remove source of sanitizer and allow level to drop. Add fresh water to dilute if necessary.

Foul Odor

Possible Cause	Solution
Foul chlorine odor: chloramine level is too high	Shock to eliminate combined chlorine.
Rotten egg smell: excess metals present	Add sequestering agent to reduce metal level.

Foam on the Water

Possible Cause	Solution
Hardness too low	Adjust up.
Some algaecides produce foam	See manufacturer's directions.
Source unknown	Add defoamer.

Cloudy Water

Possible Cause	Solution
High pH, alkalinity, calcium or TDS can contribute to cloudy water	Reduce levels or add fresh water to dilute.
Reduced filtration	Check for blockage and clean traps.
Heavy bather load	You may need to superchlorinate.

Unable to Maintain Free Chlorine (or other primary sanitizer)

Possible Cause	Solution
High TDS or pH	Reduce levels or add fresh water to dilute.
High combined chlorine level	Superchlorinate. May require double dose or more.
Sunlight dissipating chlorine	Add cyanuric acid (stabilizer).
Heavy bather loads	Increase sanitizer distribution.
High nitrate level increases chlorine demand	Add fresh water to dilute.

Colored Water

Possible Cause	Solution
Green: algae growth, low free chlorine, or high nitrate level	Treat with algaecide and/or superchlorinate.
Reddish-brown: high iron or manganese	Add sequestering (or chelating) agent.
Blue-green: high copper	Add sequestering agent.

AquaChek TruTest Gives No Free Chlorine Reading, but DPD Kit Gives a High Free Chlorine Reading

Possible Cause	Solution
Very high chloramine level (High combined chlorine can cause DPD #1 kits to give false readings for free chlorine.)	The free chlorine reading on your AquaChek meter is correct! This is a common problem at the beginning of the season. Test for total chlorine using AquaChek® Select® or AquaChek® 7. You may need to shock the water.

Scale Buildup

Possible Cause	Solution
Calcium hardness level too high	Add fresh water to dilute.
Total alkalinity, pH or TDS too high	Adjust down or add fresh water to dilute.
Calcium hardness level too low; rough soft water scale forms	Increase hardness level.
Metals present in high levels leading to buildup	Add sequestering agent to reduce metal content.

Swimmer/bather Skin and Eye Irritation

Possible Cause	Solution
High or low pH or alkalinity, or both	Maintain pH and alkalinity at ideal levels for optimum swimmer comfort.
High free chlorine level	Remove source and allow level to drop. Add fresh water to dilute if necessary.
High chloramine (combined chlorine) level	Shock (superchlorinate) to remove combined chlorine.

Recurring Algae Growth

Possible Cause	Solution
High nitrate level	Add fresh water to dilute.
Insufficient free chlorine content	Maintain an ideal level of free chlorine. Increase dosage if necessary.
Leaves, pollen or other organic waste frequently enters pool system	Keep covered when possible during peak times of contamination.
High phosphate levels	You can add a phosphate control chemical.

Green Hair

Possible Cause	Solution
Elevated copper in the water	Test copper level. Reduce copper level with a sequestering agent.
Extremely high free chlorine level (around 50 ppm) can bleach hair	If free chlorine level is excessive, keep bathers out of water until level drops.
Cheap shampoo	Find a new hairdresser.

AquaChek® TruTest™

Digital Test Strip Reader



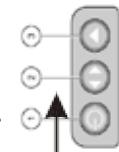
1. Press Power ON

Turn Unit On by pressing power button. Display will read "On"

Product Features and Information

MEMORY FUNCTION (#2, MIDDLE BUTTON)

Press memory button to view your last nine readings.



ERROR MESSAGES

- If ER2 appears in place of a numerical value – the test result is out of range. The parameter is either too high or too low to be accurately analyzed. Note the status level LO or HI to determine how to treat your water. Re-test after treatment.
- If ER3 appears on the screen – there is an error in reading the test strip. Ensure that you are following the test procedure correctly. Use only AquaChek TruTest instrumental test strips. No other test strip can be used.
- If ER3 appears on the screen – no strip is in place or the test strip is positioned incorrectly. The correct position is with the test pads face down in the slot with the top pad all the way to the top.

- If only LO appears in the TA location on the TruTest Meter display, the battery voltage has dropped below the permissible limit. Replace with new batteries.
- The AquaChek TruTest test strips are calibrated to work only with the AquaChek TruTest test strip reader.
- Each strip may only be used once. Do not re-dip the strip. Only dip the strip in calm areas of your pool or spa. Do not swirl or spin strip in water.
- Ensure you have a fresh supply – keep cap on tight between uses and store at room temperature.

Important! Retain!
****Instructions for use**
****Tips/Warranty information**

1-888-AQUACHEK
www.AquaChek.com/TruTest

Note: Read this instruction manual carefully and keep it available for future reference.

4. Now Wait for Results. (Do Not Hold onto Strip)

Digital Results for Free Chlorine, pH, and Total Alkalinity will appear together in seconds.
Check the status of your results for each parameter. The status [D=Low, OK=Ideal, HI=High] is displayed to the left of each digital value.

2. Press start button and dip a strip at the same time.

Remove test strip immediately and shake excess water from strip with a simple flick of the wrist.

DO NOT SLIDE THE TEST STRIP ACROSS THE GLASS

3. Place tip of strip in back end of channel, lay flat, pad side down.

DO NOT SLIDE THE TEST STRIP ACROSS THE GLASS

MAINTENANCE

- Wipe the test strip slot with fresh water and a cotton swab occasionally. This will prevent any buildup.
- Never use harsh chemicals and/or abrasive materials on the TruTest meter.
- Store the meter out of direct sunlight to protect the meter from UV damage.
- If meter will not be used for several months, remove the batteries.
- This is a water resistant case. If the meter falls into the water, remove and dry the batteries and battery compartment before use.
- Do not dispose of batteries in the trash. Please recycle. In Europe, recycle the meter according to WEEE Directive in your country.
- Intended for indoor/outdoor use
- Operating temperature range: 15-40° C
- Battery life: Approximately 4 months with typical use

RANGE OF RESULTS:

Free Chlorine: 0-15 ppm
pH: 6-8.8
Total Alkalinity: 0-300 ppm

The AquaChek TruTest Digital Test Strip reader is intended to provide a convenient alternative to visual color matching, with the ease of a digital display. The meter and test strips can achieve representative readings of pool and hot tub water conditions when following all directions and using properly stored and handled, unexpired test strips.

In general, results are comparable to other visual testing methods obtained by a person with good color matching ability. When the water sample being tested is near or outside of the range of results boundaries, results may not reflect actual water conditions. Consult a pool or hot tub professional when unusual water conditions, chemistry problems or questionable results occur.

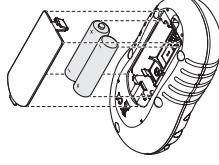
After testing, consider these actions:

- Compare the result with the water parameter range recommended per equipment or chemical program
- Treat the water per chemical manufacturer's instructions
- Re-test for confirmation of the result
- Consult with a pool or hot tub professional

For more information on operation of the product, tips on water balance, or to seek customer or technical support, please visit the website, www.aquacheck.com.

BATTERY INSTRUCTIONS

Install 2 "AAA" batteries per the diagram. Incorrect insertion will prevent the meter from turning on due to the design of the battery housing. USE ONLY ALKALINE BATTERIES. Use of any other type of battery may damage the meter and voids the warranty.



TROUBLE SHOOTING TIPS

If TruTest readings are higher or lower than expected, these differences are likely due to technique. Important:

- Press start at the same time you're dipping the test strip.
- Do not swirl or swirl the test strip when you dip.
- Simply dip strip and remove.
- Do not slide the test strip across the glass.
- Make sure the pads on the strip are facing down when placed on the meter.
- In between tests thoroughly wipe the meter and channel clean, especially if you are performing several tests in succession.

PRECAUTIONARY LABELS

Read all labels and tags attached the instrument. Personal injury or damage to the instrument could occur if not observed.



This symbol, if noted on the instrument, references the instruction manual for operational and/or safety information. To ensure the protection provided by this equipment is not impaired, do not use this equipment in any manner other than that, which is specified in this manual.

Product Safety
UL 61010-1 (ETL Listing)
CSA C22.2 No. 61010-1 (ETL Certification)
Immunity
EN 61326-1:1998 (EMC Requirements for Electrical Equipment for Measurement Control and Laboratory Use) per 2004/108/EC EMC Supporting test records by Hach Company, certified by Hach Company.
Emissions
EN 61326-2-20:1998 (Electrical Equipment for Measurement Control and laboratory use-EMC requirements) Class "B" emission limits. Supporting test records by Hach Company.
Standards include:
EN 55011 (ICESPR 11). Class "B" emission limits



Electrical equipment marked with this symbol may not be disposed of in European public disposal systems. In conformity with the European local and national regulations (EU Directive 2002/96/EC). European electrical equipment users must now return old or end-of-life equipment to the producer for disposal at no charge to the user.

Digital Test Strip Reader
TruTest™
AquaChek®

