

Water Chemical Balance and You

Balanced pool water is one of the most important parts of aquatic maintenance. Balanced pool water preserves equipment, protects swimmers, and keeps the water clear. Regular testing of important chemicals is required to ensure well balanced water. Below is a list of the most important chemicals for balancing water and their role in the process:

pH

pH measures the acidity or basicity of water on a logarithmic, 1 – 14 point scale. On the pH scale, 1 is the most acidic and 14 is the most basic, with 7 being neutral. The ideal pH of a pool is 7.2-7.4, the same as our eyes natural range. By keeping pH in this range a comfortable, clear pool can be achieved.

Calcium Hardness

Calcium hardness is the measure of dissolved calcium in the water. Since the type of fill water and construction of a pool is different from pool to pool, the calcium hardness range is much larger than the range of other pool chemicals, 200-1000ppm. For ease of control, the calcium hardness is generally allowed to find its own level provided it falls within the tolerance range.

Total Alkalinity

Total alkalinity is the measure of all free alkaline particles in water. Total alkalinity acts as a buffer to prevent pH from having large changes in short amounts of time.

Stabilizer

Cyanuric acid is used as a chlorine stabilizer to decrease chlorine's sensitivity to light. The cyanuric acid converts chlorine to a sunlight resistant form, helping to dramatically decrease the rate of chlorine consumption on sunny days or in pools with large amounts of shallow water. Accu-Tab tablets don't contain stabilizer to prevent uncontrolled rise in stabilizer concentrations.

Now that you've learned about the role of chemicals used for water balance, here is a helpful chart for ideal values for pools with an Accu-Tab Tablet Chlorination System:

Parameter	Ideal Range
pH	7.2-7.4
Total Alkalinity	80-100 ppm
Stabilizer	40-80 ppm
Free Available Chlorine	1-3 ppm
Calcium Hardness	200-1000 ppm

Assuming your pool is outside of this range, there are some adjustments that need to be made. The most common corrections are included below:

pH

- If the pH is too high, decrease it by adding a quarter gallon of muriatic acid per 50,000 gallons to lower the pH by 0.1.
- If the pH is too low, increase the pH by adding one pound of soda ash per 50,000 gallons to increase the pH by 0.1.

Calcium Hardness

- Increase the calcium hardness by adding approximately six pounds of calcium chloride per 50,000 gallons to raise the calcium hardness by 10ppm.
- To lower the calcium hardness, dilute the pool by adding more water.

Total Alkalinity

- Increase total alkalinity by adding seven pounds of sodium bicarbonate per 50,000 gallons to increase the total alkalinity by 10ppm
- Decrease total alkalinity by adding approximately a gallon of 32% muriatic acid per 50,000 gallons to lower the total alkalinity by 10ppm.

Stabilizer

- Increase stabilizer by adding four pounds of cyanuric acid per 50,000 gallons to increase stabilizer by 10ppm.

If these fixes do not solve your issue, there is likely an issue with your chlorinator. Below is a chlorinator troubleshooting guide which details the most common symptoms of a malfunctioning chlorinator and provides insight for fixing these issues.

Free Chlorine < 1.0ppm

- Chlorinator is out of tablets – fix by adding more tablets to the chlorinator
- Low rate of tablet delivery – Low tablet delivery rate is fixed by either increasing the water flow to the chlorinator or checking the controller and sample probes

- High demand –Shock with granular cal hypo

High Free Chlorine > 3.0ppm

- High tablet delivery –High tablet delivery can be remedied by decreasing water flow to the chlorinator
- Flooded Chlorinator—If the chlorinator becomes flooded, check the outlet pipe for blockage. If the outlet pipe is not clogged, check the controller and sample probes are in good operating condition

Heavy Chlorine Odor

- High combined chlorine—Combined chlorine is calculated by subtracting the free chlorine from the total chlorine. If this number exceeds 0.5ppm, increase the chlorinator water flow or shock the pool with granular.

Cloudy Water

- Poor Filtration –Poor filtration is generally a sign its time to backwash the pump.
- Free chlorine < 1ppm –Increase the water flow to the chlorinator and shock the pool
- Water not balanced –Adjust the pH and total alkalinity.

Scale

- Water is not balanced –Adjust the pH and total alkalinity

Air bubbles in Pump Strainer

- Water level is too low—Add water to get the pool up to the proper level
- Chlorinator lid is not sealing –Remove and reattach the chlorinator lid using silicon grease on the O-ring inside the lid

Chlorinator Filling with Water

- Outlet pipe is too small –Increase the outlet size to the same size as the chlorinator outlet fitting
- Chlorinator is positioned below water level –raise the chlorinator to at least one foot above recirculation pump suction
- Inlet water flow is too high –Reduce the inlet water flow