What Good Water Balance Means to You & Your Pool

Many customers & pool owners ask, "why do I have to worry about testing & balancing my swimming pool water? If it looks clear, everything must be good. Right?"

The answer is, "Oftentimes, not."

The short answer is if the water isn't properly balanced, you're not safe, the pool and all of its components (filter, pump, heater, pool surfaces, fittings, even the vinyl liner, etc) just won't last long, and finally, you'll be wasting your money!

Wasting money? Yes. When the pool water is out of balance whatever sanitizing system you are using can't do an efficient job.

How is Water Balance affected? By almost anything that comes in contact with it. Chemicals, people, environmental debris, rain.

Rain water can dramatically effect your water balance, depending on its pH & obviously the quantity of rain. The pH of rain varies across the country generally becoming more acidic as you go from west to east. As rain falls, it carries down particulate matter that is suspended in the air. This suspended particulate is dust, dirt, soot, chemicals, even bird droppings.

Tap water? We are seeing many instances of poorly balanced water from across the country. This water is also bringing in fair amounts of dissolved metals that can lead to staining of the pool surface.

So, you say, "I just have to worry about the pH in the pool, right?" No. You also need to be concerned about Total Alkalinity & Calcium Hardness.

Tips to Maintaining Proper Water Balance:

1. **Test** your pool water at least 2 times each week from opening to closing. More often in times of frequent heavy rain, heavy partying & frequent fresh water top-offs.
2. Have your **water professionally tested** at least 3 times each season: upon Pool Opening, mid-Season & before Winter Closing.
3. **Use proper pool chemicals** not household products. All Pool Chemicals are specifically made to treat your pool. Gradually make adjustments to pH. Would you bake or prepare foods with pool chemicals?
4. **Use fresh testing reagents** or strips every season or at least twice each year in warmer climates.

Pool Water Balance Parameters:

pH: all pools - 7.4 - 7.6

Total Alkalinity: vinyl - 80 - 140 ppm
gunite - 80 - 100 ppm

Water Hardness: vinyl - 175 - 250 ppm
gunite - 225 - 300 ppm

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The Importance of Proper Pool Water Balance.

pH, Total Alkalinity & Calcium Hardness

Important information for all swimming pool owners who want comfortable feeling water, efficient chemical use and long life of the pool & its equipment.

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"Make life simple. Make life better."

pH (the power of Hydrogen) - is the fundamental water balancing measure you need to monitor & control.

Simply put, pH is the measure of how basic (high pH) or how acidic (low pH). It is measured on a scale from 0 (battery acid) to 14 (drain cleaner).

pH = 0	Battery acid, strong hydrofluoric acid
pH = 1	Hydrochloric acid secerted by stomach lining
pH = 2	Lemon juice, gastric acid, vinegar
pH = 3	Grapefruit, orange juice, soda
pH = 4	Tomato juice, acid rain
pH = 5	Soft drinking water, black coffee
pH = 6	Urine, saliva
pH = 7	"Pure" water
pH = 8	Seawater
pH = 9	Baking soda
pH = 10	Great Salt Lake, milk of magnesia
pH = 11	Ammonia solution
pH = 12	Soapy water
pH = 13	Bleach, oven cleaner
pH = 14	Liquid drain cleaner

The pH scale is also "logarithmic" which means that as you go up or down the scale, the values change by a factor of 10. In other words, a pH of 6.0 is 10 times more acidic than a pH of 7.0. Likewise, a pH of 9.0 is 100 times more basic than a pH of 7.0.

Proper pH is essential for even living. The pH of your blood is approximately 7.4. Changes in blood pH can lead to disease & death.

For your swimming pool, all pool sanitizers work most efficiently in a narrow pH range of 7.2 - 7.6. As the pH lowers below 6.8, chlorine, bromine & others "speed up" and quickly become exhausted. The water may remain clear, but you will go through chlorine incredibly fast. Over 7.8 and sanitizers slow down. So slow that algae will bloom or the water will become cloudy.

Other affects of unbalanced pH: low pH leads to corrosion of pool surfaces (even vinyl liners which leads to "pin-holes" & leaking), heaters, filters, pumps, ladders & handrails, (stainless steel can rot out in a matter of a couple of weeks), A good example of corrosion is shown to the left with the copper piping.

Low pH will also lead to green hair (dissolved copper in the water plates out on swimmers' hair, especially blondes, causing it to turn green) and in the worst cases, tooth decay!

When the **pH is low** you will notice: higher sanitizer use, very clear water, spot algae, a "slick" feel to the water, burning of the eyes, skin and mucous membranes.

High pH will lead to slow sanitizer efficiency (sanitizers can't kill & control bacteria and algae as designed), cloudy water, scaling of pool surfaces (tile, vinyl), scaling of equipment (in filters, scaling will result in shorter filter runs - see the picture below right) including filters, pumps, o rings, heaters (scale build-up of just the thickness of a regular sheet of paper will decrease heater efficiency by a minimum of 10%, and increasing the cost to heat your pool).

When the **pH is high** you will also notice: faster algae growth, a "heavy" feel to the water, burning of the eyes (also has a pH of 7.4 like blood), skin and mucous membranes.

What affects pH? Everything! As far as pool chemicals go, slow dissolving chlorine tabs & sticks have very LOW pH values, about 3.0. Bleach or liquid chlorine ,Cal Hypo (hth or most shock treatments), salt generated chlorine have very HIGH pH values, over 12.0. Sodium Dichlor is close to neutral with a pH of about 6.0. Most algaecides & clarifiers have neutral pH values.

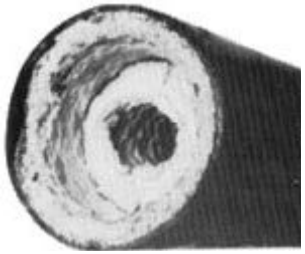
Total Alkalinity (TA) - similar to pH but not the same. TA actually works as a buffer or a control for pH.

The affects are the same as pH, but taking longer (weeks rather than days) in its effects. TA as a buffering agent, helps keep the pH balanced. In other words, if the TA is Low, the pH "bounces" easily from low to high; add pH increaser on Monday & find that it is low again on Wednesday. TA values under 3.0, can cause the water to harmful to humans (especially younger children with sensitive skin), as the pH drops, skin lesions can occur around waist bands & tops. If the TA is High, the pH will be difficult to lower; lower it on Friday, do it again on Sunday.

When adjusting Total Alkalinity, be sure to do it at the beginning of the swim season. Subsequent adjustments typically need to be done on a monthly basis (depending on rain & fill frequency).

Calcium Hardness (CH) - the "stranger" to water balanced. Your pool, like your body, needs calcium. Osteoporosis occurs when the body lacks calcium & takes it from your bones.

In the pool, low CH leads to pin-holes in liners (voids liner warranty) & rough surfaces on gunite or concrete pools. These problems take place over a longer period of time (months).



High CH leads to scaling. Scaling means rough pool surfaces, heater problems & inefficiency. Sand filters can become a solid "rock" as the excess calcium permanently bonds with the filter sand.

That's why Water Balance is important to your swimming pool!