



WATER BALANCE

Water Recreation Program

Alkalinity

Is a measure of some dissolved minerals in water

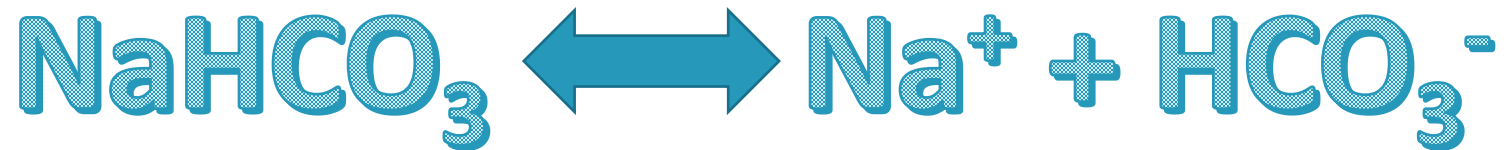
bicarbonates

carbonates

Hydroxides

Alkalinity

Alkalinity is a buffering system that helps maintain pH.



The bicarbonate ion is able to take or give up a hydrogen ion.

Alkalinity

Typical Range

80 – 120 ppm

Sodium
80 ppm
hypochlorite

Trichloro/dichloro/
120 ppm
gas chlorine

Calcium Hardness

Calcium hardness is not a regulated chemical parameter in Washington but it is important for pool operators to manage.

Recommended range

200 – 400 ppm

Total Dissolved Solids

TDS Is everything that's in the water. Generally it should not exceed 1500ppm + starting TDS.

Langelier Saturation Index

This is a way to determine if water is balanced. Balanced water does not deposit scale nor does it etch or corrode pool parts and surfaces.

Scaling causes damage by depositing calcium:

- on the pool surface

- in the filter

- on the interior surface of pipes

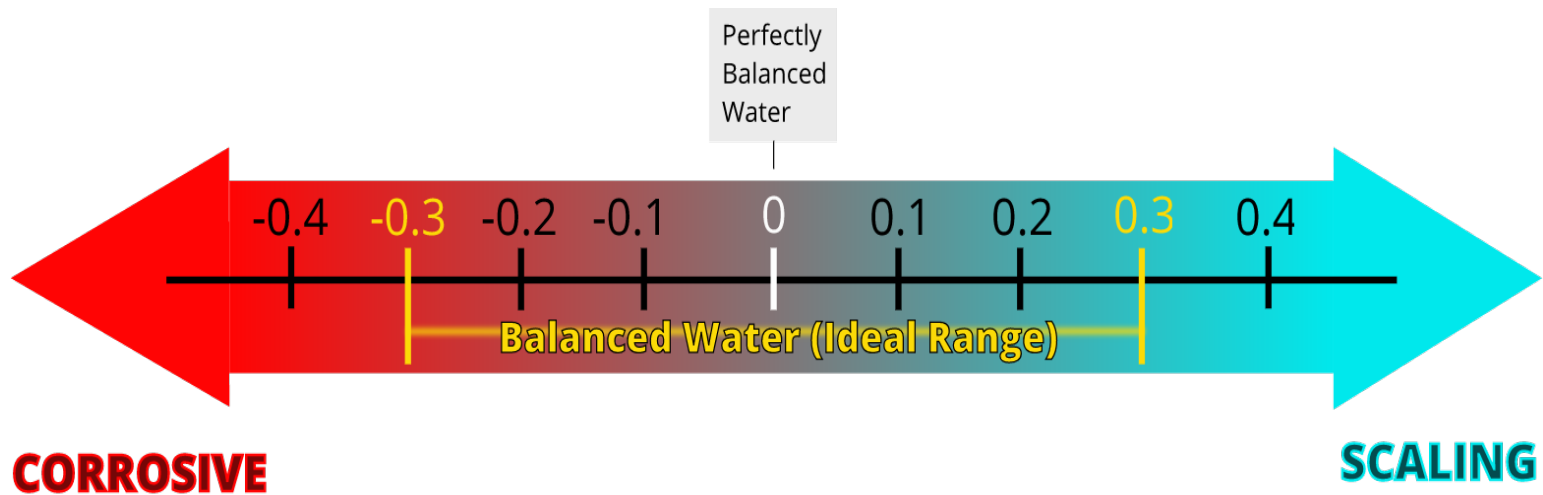
Corrosive water causes damage by:

- etching plaster pools

- corroding or dissolving metal parts

Langlier Saturation Index

$$SI = pH + Tf + Cf + Af - TDSf$$



Calculating SI

$$SI = pH + Tf + Cf + Af - TDSf$$

$$-0.4 = 7.7 + 0.8 + 2.0 + 2.1 - 12.2$$

- Measure pH – 7.7
- Measure Temp – 87 degrees
- Measure Calcium – 230ppm
- Measure Alkalinity - 125 ppm
- Measure TDS - 1200

Saturation Index Factors					
Temperature		Calcium Hardness		Total Alkalinity	
°F	Tf	ppm	Cf	ppm	Af
32	0.0	25	1.0	25	1.4
37	0.1	50	1.3	50	1.7
46	0.2	75	1.5	75	1.9
53	0.3	100	1.6	100	2.0
60	0.4	125	1.7	125	2.1
66	0.5	150	1.8	150	2.2
76	0.6	200	1.9	200	2.3
84	0.7	250	2.0	250	2.4
94	0.8	300	2.1	300	2.5
105	0.9	400	2.2	400	2.6
		800	2.5	800	2.9

Total Dissolved Solids Factors	
<1,000 ppm	>=1,000 ppm
12.1	12.2

Questions?



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