DEROSA AQUATIC CONSULTING
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WATER BALANCE

Balanced water neither corrodes nor scales and is essential for protecting pool equipment including pipes, filters and pumps. Corrosive or aggressive water dissolves metals and minerals while scaling water can create unsightly buildup and can damage pool heaters. Water balance is measured using the Saturation Index, often called the Langlier Saturation Index or the Calcium Saturation Index. The Saturation Index shows the tendency of pool water to either scale or corrode.

Water balance is determined by **FIVE VARIABLES :**

- pH
- Calcium Hardness
- Total Alkalinity
- Temperature
- Total Dissolved Solids

Pool operators should regularly test pH, Calcium Hardness and Total Alkalinity in addition to recording the pool temperature. Total Dissolve Solids can be tested with an electronic TDS meter. In most cases, however, the effect of TDS on the Saturation Index is so negligible that TDS are often ignored. Once chemical readings have been taken from the pool, the values are then compared to a chart and the appropriate factors (temperature factor, calcium factor and alkalinity factor) are entered into the Saturation Index formula. **BALANCED WATER YIELDS A SATURATION INDEX OF -0.3 TO +0.3**

SATURATION INDEX = PH + T.F. + C.F. + A.F. – 12.1

Temp. ° F	TF	CH (ppm)	CF	TA (ppm)	AF
32°	0.1	5	0.3	5	0.7
37 °	0.1	25	1.0	25	1.4
46 °	0.2	50	1.3	50	1.7
53 °	0.3	75	1.5	75	1.9
60 °	0.4	100	1.6	100	2.0
66 °	0.5	150	1.8	150	2.2
76 °	0.6	200	1.9	200	2.3
84 °	0.7	300	2.1	300	2.3
94 °	0.8	400	2.2	400	2.6
105 °	0.9	800	2.5	800	2.9

Total Alkalinity: **80 – 120 ppm**
measure of resistance to change of pH

Calcium Hardness: 300 – 500 ppm
measure of calcium ions in the water

pH: 7.4 – 7.6
measure of acid v. base

For a "magical" water balance, keep CH levels at least three times TA levels.

-0.6 -0.5 -0.4 **-0.3 -0.2 -0.1 0 +0.1 +0.2 +0.3** +0.4 +0.5 +0.6
Corrosive **Balanced** Scaling