Saturation Index Tables

The minute that catches what every other test on the sheet misses

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SATURATION INDEX = pH + TF + CF + AF − TDS CONSTANT

Target is −0.3 to +0.3, and −0.6 is a long way past marginal. Negative water is short of calcium and takes it from plaster, grout, tile bedding and the heat exchanger. Positive water drops the difference as scale, on the hottest surface first. **Every reading on your sheet can be legal while the water quietly takes your building apart.**

TEMPERATURE FACTOR

read the band, not the point

32–36°F	37–45°F	46–52°F	53–59°F	60–65°F	66–75°F	76–83°F	84–93°F	94–104°F	105+°F
0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9

HARDNESS AND ALKALINITY FACTORS

every step a test kit reads

HARDNESS	25	50	75	100	125	150	175	200
CF	1.0	1.3	1.5	1.6	1.7	1.8	1.8	1.9
HARDNESS	250	300	350	400	500	600	800	1000
CF	2.0	2.1	2.1	2.2	2.3	2.4	2.5	2.6

ALKALINITY	25	40	50	60	70	80	90	100
AF	1.4	1.6	1.7	1.8	1.8	1.9	2.0	2.0
ALKALINITY	110	120	140	160	180	200	250	300
AF	2.0	2.1	2.1	2.2	2.3	2.3	2.4	2.5

Both columns are logarithms, which is why the index answers to a ratio and not to an amount: 100 to 200 ppm of alkalinity moves the factor 0.3, 200 to 300 moves it 0.2, and 300 to 400 moves it 0.1. The more you already have, the more it takes to move the number.

THE CONSTANT

total dissolved solids

Under 1,000 ppm	12.1	fresh fill, indoor pools, most residential
1,000 to 2,000 ppm	12.2	most outdoor commercial pools by midsummer
2,000 to 3,000 ppm	12.3	a pool overdue a partial drain
Over 3,000 ppm	add 0.1 a thousand	salt pools, which sit at 3,200 by design

THE INDEX AT A GLANCE

pH 7.5, water 84°F, constant 12.1

	TA 60	TA 80	TA 100	TA 120	TA 150
Hardness 100	-0.5	-0.4	-0.3	-0.2	-0.1
Hardness 150	-0.3	-0.2	-0.1	+0.0	+0.1
Hardness 200	-0.2	-0.1	+0.0	+0.1	+0.2
Hardness 250	-0.1	+0.0	+0.1	+0.2	+0.3
Hardness 300	+0.0	+0.1	+0.2	+0.3	+0.4
Hardness 400	+0.1	+0.2	+0.3	+0.4	+0.5

Green is inside −0.3 to +0.3. Read your own pool off this grid and then correct it properly with the real numbers, because one column moves everything: every tenth of a point of pH moves the index by the same tenth, and a pool at 7.8 reads 0.3 higher than the same water at 7.5.

WHAT TO DO ABOUT THE ANSWER

Below −0.5	aggressive, and working	alkalinity up first, then hardness. Check the heater
−0.5 to −0.3	aggressive, slowly	raise hardness toward 300 and hold it there
−0.3 to +0.3	satisfied	nothing. Log it and run it again next week
+0.3 to +0.5	starting to scale	alkalinity down with acid, in stages
Above +0.5	scaling now	acid, and look at the cell and the heat exchanger

Correct with alkalinity and hardness, never with pH. Dropping pH to fix an index gives the number back and takes your sanitizer with it, because at pH 8.0 only 26% of free chlorine is in the killing form and at 7.4 it is 58%. Hold pH where sanitation needs it and let hardness and alkalinity carry the whole correction.