Saturation Index is a tool for determining if your pool's water is corrosive or scaling. If your water is corrosive, the pool's water will dissolve calcium in pool linings and protective coatings. If your water is scaling, calcium will be deposited on pipelines, filters, valves, and pump.

Saturation Index (SI) can be calculated using the following formula:

SI = pH + Temperature Factor (TF) + Calcium Factor (CF) + Alkalinity Factor (AF) - 12.1

Temperature (°F)	TF	Calcium Hardness	CF	Total alkalinity	AF
32	0.0	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	2.5
94	0.8	400	2.2	400	2.6
105	0.9	800	2.5	800	2.9
		1000	2.6	1000	3.0

Saturation Index	< -0.5	Corrosive
	-0.5 to 0.5	Neutral
	> 0.5	Scaling

Examples:

pH = 7.6, Temperature = 76°F, Calcium Hardness = 200 mg/L, Alkalinity = 100 mg/L

SI = 7.6 + 0.6 + 1.9 + 2.0 - 12.1 = 0 → water is balanced

pH = 8.0, Temperature = 76°F, Calcium Hardness = 400 mg/L, Alkalinity = 80 mg/L

SI = 8.0 + 0.6 + 2.2 + 1.9 - 12.1 = 0.6 → water is scaling

pH = 7.2, Temperature = 76°F, Calcium Hardness = 200 mg/L, Alkalinity = 60 mg/L

SI = 7.2 + 0.6 + 1.9 + 1.8 - 12.1 = -0.6 → water is corrosive

Normal Control Levels

pH = 7.4-7.8, free chlorine = 0.6 (minimum), total alkalinity 80-120 mg/L, calcium hardness = 180-250 mg/L

Alkalinity control:

- to increase - 1-1/2 lb of sodium bicarbonate NaHCO3 baking soda will raise the alkalinity of 10,000 gallons of water by 10 mg/l.
- to lower - add muriatic acid no more than one pint (1/8 gallon) per 5,000 gallons of pool water will lower alkalinity by 12 mg/l (or, add 1.25 lb of sodium bisulfate).

pH:

- to increase - use soda ash.
- to decrease - muriatic acid or sodium bisulfate.

To lower calcium hardness, it is simpliest to dilute with soft water

If you add water to the pool without draining any (for example: water lost to evaporation), calcium levels will increase over time. Backwashing will remove some water, but on its own will not lower hardness over time. For every inch of water added to the pool, the calcium hardness goes up by the following formula:

$$\frac{Surface\ Area\ (ft^2)}{Volume\ (Gal)} \times 0.623 \times raw\ Calcium\ Hardness\ \left(\frac{mg}{L}\right) = Calcium\ Hardness\ increase\ \ per\ inch\left(\frac{mg}{L}\right)$$

For your pool:

Disinfection	pH	lower residual limit	upper residual limit
Chlorine	<7.8	0.6	5.0
	7.8-8.2	1.5	5.0
	>8.2	*close pool*	
Bromine	<7.2	*close pool*	
	7.2-7.8	1.5	6.0
	>7.8	*close pool*	

Other points:

- Broadcasting chemicals is not allowed while the pool is open. Should you need to broadcast chemicals into the pool, you must first close the pool and allow 1 full turnover of the pool (typically 6 hours) before re-opening.
- Keep your flow meter clean. Most flow meters will become dirty over time. If the pool flow is too high, it can become a drowning hazard due to suction. If the pool flow rate is too low, the pool may not be adequately disinfected.
- Maintain water level to allow adequate skimming of entire pool surface
- Use of cyanuric acid-based chlorine (or any other chlorine stabilizer) is prohibited. Pools found using or containing any cyanuric compound shall be closed, drained and refilled prior to continued use.

Pool #1 Name _____

Pool Volume _____ Surface Area _____

Pool Dimensions _____

Pool Depth min _____ max _____

Disinfectant _____

Filtration type _____

Turnover rate _____ Pump Rate _____

Capacity _____

Pool #2 Name _____

Pool Volume _____ Surface Area _____

Pool Dimensions _____

Pool Depth min _____ max _____

Disinfectant _____

Filtration type _____

Turnover rate _____ Pump Rate _____

Capacity _____