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Saturation Index

The Saturation Index (SI) is a method of determining whether water will deposit calcium carbonate or maintain it in solution. In short it tells you whether your water is corrosive or scale forming. The SI incorporates the five balance factors: pH, total alkalinity, calcium hardness, temperature, and total dissolved solids. For pool and spa water, the ideal result of performing this index is to have a result of zero, i.e., SI = O. Balanced water is between - 0.3 and + 0.3. Corrosive water is - 0.4 and lower. Scaling water is + 0.4 and higher. Having water outside of the balanced range can contribute to extensive damage to the pool surface, equipment and structure.

Calculating the Saturation Index
To determine whether pool or spa water is properly balanced, a full water chemistry analysis is necessary. When calculating the SI use the factors below. If an actual measurement is not found in the chart, use the next greatest value. The measured pH value is used directly in the formula. There are many slide rule saturation index calculators available that are quick and easy to determine your Saturation Index.

SI = Saturation Index | pH + pH as tested | Tf + Temperature factor | Cf + Calcium factor | Af + Alkalinity factor | − TDSf TDS factor

	Value	Factor
pH		
Temperature		
Calcium Hardness		
Alkalinity		
Sub-Total		
Total Dissolved Solids (TDS)		
Saturation Index		

Saturation Index Factors

Temperature			Calcium Hardness expressed as $CaCO_3$		Total Carbonate Alkalinity	
°F	°C	Tf	ppm (mg/L)	Cf	ppm (mg/L)	Af
32	0.0	0.0	25	1.0	25	1.4
37	2.8	0.1	50	1.3	50	1.7
46	7.8	0.2	75	1.5	75	1.9
53	11.7	0.3	100	1.6	100	2.0
60	15.6	0.4	125	1.7	125	2.1
66	18.9	0.5	150	1.8	150	2.2
76	24.4	0.6	200	1.9	200	2.3
84	28.9	0.7	250	2.0	250	2.4
94	34.4	0.8	300	2.1	300	2.5
105	40.6	0.9	400	2.2	400	2.6
			800	2.5	800	2.9

Total Dissolved Solids Factors

Less than 1,000 ppm (mg/L)	1,000 ppm (mg/L) or greater
12.1	12.2

***High levels of Cyanuric Acid can contribute to false Saturation Index readings. Cyanuric acid should never be above 30 ppm due to the adverse effects on sanitizer activity.*