pHlocrite
SYNTHETIC SEMI- CALCINED DOLOMITIC LIMESTONE

Calculation of the Langelier Saturation Index

For a more accurate calculation and to cover those cases where the calcium hardness and/or the alkalinity exceed the values given in the various published tables, the following formula takes advantage of the logarithm facility available on most pocket calculators. The improved accuracy and range of this calculating method does not affect the necessity to maintain a slightly positive index of around + 0.2 nor does it affect the basic requirement to have a minimum alkalinity and calcium hardness of 75mg/l, a minimum dissolved oxygen of 6 mg/l and a maximum alkalinity not exceeding 250mg/l (all as $CaCO_3$).

Langelier Saturation Index = Actual pH minus Saturation pH

Saturation pH = 9.3 + Temp.Factor + TDS Factor – $\log_{10}$ Calcium.Hardness as Ca – $\log_{10}$ Alkalinity as $CaCO_3$

Temperature Factors		Total Dissolved Solids Factors	
15°C.	2.21	500mg/l.	0.168
20°C.	2.10	1000mg/l.	0.200
25°C.	1.99	1500mg/l.	0.217
30°C.	1.89	2000mg/l.	0.227
35°C.	1.79	3000mg/l.	0.239
40°C.	1.71	4000mg/l.	0.245

The factors for other values of total dissolved solids, within the range 100mg/l to 4500mg/l may be calculated by means of the following formula.

$$\frac{2.5\,\mu^{0.5}}{1 + 5.3\,\mu^{0.5} + 5.5\,\mu}$$

where μ = TDS mg/l. x 0.000025 and TDS mg/l. = Conductivity @ 25°C.x 0.7

For an even more accurate computation which takes into account the monovalent and divalent cation ratios, use the formula in WRc publication TIR 387 or the computer programme 'SICALC' listed in their publication LR1009.