

The Total Alkalinity (TA) of pool or spa water indicates the water's ability to resist fluctuations in pH (the "buffer capacity" of the water). The analytical method used is a simple acid-base titration, where the carbonates and bicarbonates primarily responsible for the TA level are reacted with dilute hydrochloric acid (Total Alkalinity Reagent No. 2), forming carbon dioxide and water:



The indicator used (Total Alkalinity Reagent No. 1B) is an ethanolic solution of phenol red, which changes colour from blue to orange at the endpoint of the titration. Sodium thiosulfate (Total Alkalinity Reagent No. 3) is used to neutralise any chlorine or bromine present in the sample, thereby preventing bleaching of the indicator.

If a measurable quantity of cyanuric acid is present in the water sample, it will distort the result of the Total Alkalinity titration such that the measured TA value is higher than the true TA level. To compensate for this, the following calculation needs to be performed:

Distortion of Total Alkalinity Test by Cyanuric Acid

Adjusted TA = Measured TA - (Distortion Factor x CYA Level)

The Distortion Factor is dependent upon the pH of the pool water, as given in the table below.

Measured pH	Distortion Factor
7.2	0.25
7.5	0.30
7.8	0.35

So, for example, if the measured TA of a pool water sample is 175 ppm, the stabiliser level is 150 ppm and the pH is 7.8, then the adjusted TA will be $175 - (0.35 \times 150)$ or 122.5 ppm.

Note to users of the ALEX program: The Pool Test routine includes an algorithm that automatically adjusts the entered TA reading to compensate for any cyanuric acid present. There is no need to manually change any values entered.

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