Method Abstract #97

Alkalinity and Hardness by Potentiometric Titration

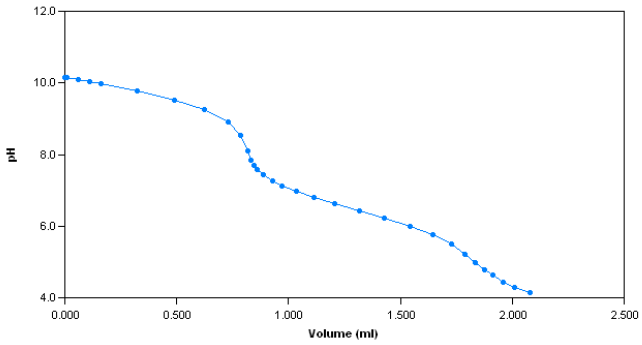
Scope and Application

This method determines the alkalinity and total hardness of a water sample taken from a single aliquot. It conforms to EPA Method 310.1, Standard Method 2320 and ASTM Method D 1067 for alkalinity analysis, and is a variation of Standard Method 2340, EPA 130.2 and ASTM D 1126 for the hardness measurement.

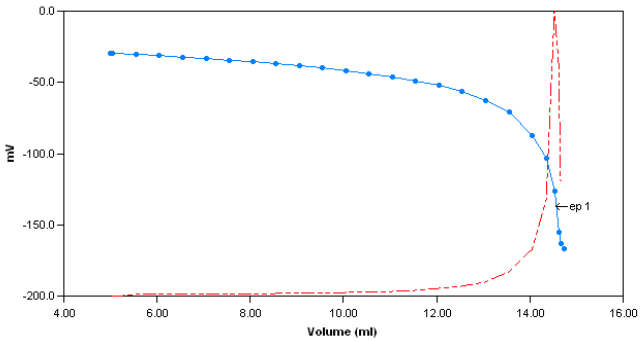
Method Summary

The sample is first titrated with sulphuric acid to a pH of 4.2. The total alkalinity of the sample is then calculated and reported. Next, pH 10 hardness buffer is added to the sample until the pH of the sample reaches 10. The sample is then titrated with EDTA to an endpoint (measured with a calcium electrode) and the total hardness is calculated and reported.

Sample Titration Curves



Alkalinity



Hardness

Method Performance

Parameter	Specification for Hardness following Alkalinity titration	Specification for Hardness Alone
Measuring Range*	2 – 1000ppm	2 – 1000ppm
MDL**	2.0ppm	2.0ppm
RSD @ 2ppm	19.22%	22.01%
RSD@ 10ppm	3.54%	4.82%
RSD @ 100ppm	15.23%	11.88%
RSD @ 500ppm	0.49%	0.31%

*This measuring range was determined by analyzing laboratory-prepared standards formulated from calcium carbonate.

**The Method Detection Limit (MDL) was determined based on data obtaining a coefficient of variance better than 30%. Results may differ depending on laboratory practices and sample matrix.