

Method Abstract

Summary: This method is used for the determination of alkalinity in drinking water, surface water, saline water, and domestic and industrial wastes according to USEPA Method 310.2. Samples are mixed with a methyl orange indicator solution that is weakly buffered at pH 3.1. Alkalinity from carbonates, bicarbonates, and hydroxides causes the color of the indicator solution to change from red to yellow. The absorbance is measured at 550 nm, which is the wavelength of the maximum absorbance of the red form of the indicator. Since methyl orange alkalinity is an inverse chemistry, the absorbance decreases as alkalinity increases. The decrease in absorbance at 550 nm is directly proportional to the sample alkalinity.

Interferences: Alkalinity of samples with pH values less than 3.1 cannot be determined by this method. Treat samples containing chlorine with sodium thiosulfate. Color or background absorbance at 550 nm may interfere with the assay. Filter samples prior to analysis to remove turbidity. If samples are filtered, this method is not approved for NPDES (National Pollutant Discharge Elimination System) monitoring.

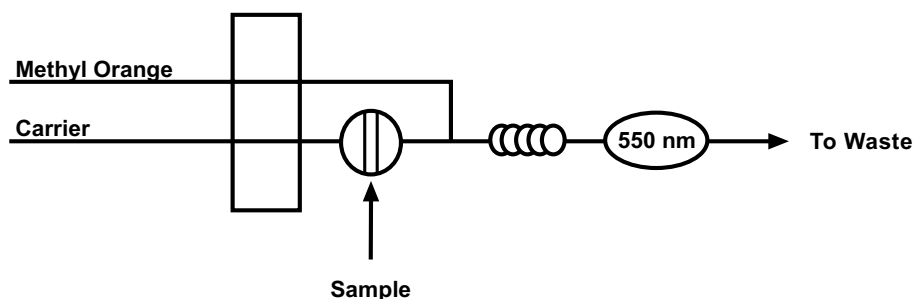
Performance Specifications:

Range:	10–600 mg/L as CaCO ₃
Throughput:	50 samples/hour
Precision:	
10 mg/L	<2% RSD
20 mg/L	<2% RSD
Method Detection Limit (MDL):	1.3 mg/L as CaCO ₃

Chemicals:

DOWFAX® 2A1 (OI Analytical Part #A000080)	Potassium Acid Phthalate, C ₈ H ₅ O ₄ K
Hydrochloric Acid, concentrated, HCl	Sodium Carbonate, anhydrous, Na ₂ CO ₃
Methyl Orange, C ₁₄ H ₁₄ N ₃ O ₃ Na	Sodium Thiosulfate, Na ₂ S ₂ O ₃

Basic Flow Diagram:



Note: This method complies with USEPA Method 310.2.

Selected References: *Methods for Chemical Analysis of Water and Wastewater*; EPA-600/4-79-020; U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring and Support Laboratory: Cincinnati, OH, 1984; Method 310.2.

Standard Methods for the Examination of Water and Wastewater, 20th ed.; American Public Health Association: Washington, D.C., 1998.

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