Thermo
ELECTRON CORPORATION

Potentiometric Titration Application Notes Applications Log # **676**

Overview The calcium content in a 20 ppm standard solution determined via an indicator titration using the Orion 960 Autochemistry system and an Orion 9629BN cupric combination electrode. The standard solution electrode. The standard solution also contains 2 ppm cupric as the indicator, EGTA is used as the titrant, and the endpoint is determined using a first derivative technique.

Industry Chemical

Species Measured Calcium

Sample 20 ppm standard solution of Calci

Sample Size 5.0 ml

Typical Concentration ~20.0 ppm

Technique # 6 First Derivative

Electrode Cupric Combination electrode

Solutions Internal Filling Solution (Cat. 900063); 0.1 M Calcium standard (Cat. 922006); 0.1 M Cupric standard (Cat. 942906); Sodium Tetraborate decahydate (Na2B4O7 10H2O); 0.0009874 M EGTA; DI water.
Thermo Orion 960 Autochemistry System (Cat. 096000);

Sample Prep Pipette 5 ml standard solution in a 150 ml plastc beaker. Add 45 ml of tetraborate decahydate pH solution in the above beaker.Adjust pH between 10.5~11.0 by using ammonium hydroxide.

Statistics

# of Trials	5	***Mean***	21.8 ppm	***%CV***	0.32

Analysis Time 10.7 min

Comments Rinse the electrodes, stirrer, and dispenser probe thoroughly between measurements with deionized water.
Bias in result is attributed to 2 ppm cupric present.

Method Parameters

Sample Volume/Weight	5 ml	***Timed or Stability Readings***	10.0 sec
Constant Increment	0.1 ml	***Number of Endpoints***	1
Max Titrant Volume	4.0 ml	***Desired Units***	ppm (v)
Molecular weight	40.0	***Predose***	1.0 ml
Prestir	3.0sec	***Addtional Parameters***	Total solution volume 50 ml;Titrant concentration 0.0009874 M of EGTA.
Reaction Ratio	1.0		