



Thermo

ELECTRON CORPORATION

Potentiometric Titration Application Notes

Applications Log # 20

Overview

The purity of acetyl salicylic acid in aspirin is determined using the first derivative titration technique. H₂SO₄ titrant is added to a volume of 0.1 M NaOH containing an accurately weighed dry aspirin sample, and an Orion Ross combination pH electrode. A blank value is determined and the Orion 960 Autotitrator PLUS determines the endpoint and calculates the purity of each sample. Unlike titration analysis using color indicators, the measurement is unaffected by color or turbidity.

Industry	Pharmaceutical and Cosmetics
Species Measured	Acetyl Salicylic Acid
Sample	Aspirin
Sample Size	0.35g
Typical Concentration	92% w/w
Technique	# 6 First Derivative
Electrode	Ross Combination pH 8102BN
Solutions	Electrode Fill 810007; 0.25M H ₂ SO ₄ ; 0.1M Sodium hydroxide; deionized water
Sample Prep	A homogeneous mixture of 20 aspirin tablets is ground to a fine powder because the quantity of acetyl salicylic acid in each tablet can vary. Accurately weigh 0.35 g of powder in a sample beaker. Add 50 mL of 0.1 M NaOH and boil for 10 minutes in order to hydrolyze the ester groups. When the solution is cooled, titrate with H ₂ SO ₄ .

Statistics

# of Trials	10	Mean	91.56%w/w	%CV	0.43
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Analysis Time 4.8minute(s)

Comments Rinse the electrodes, stirrer, and dispenser probe between measurements with deionized water.

Method Parameters

Sample Volume/Weight	0.354 g	Timed or Stability Readings	8.0 mV/min stability
Constant Increment	10.0 mV	Number of Endpoints	1
Max Titrant Volume	5.00 mL	Desired Units	% w/w
Molecular weight	180.16 g	Predose	2.3 mL
Prestir	5.0 second(s)	Additional Parameters	
Reaction Ratio	-1.00		