



# Thermo

ELECTRON CORPORATION

Potentiometric Titration Application Notes

Applications Log # 213

## Overview

The concentration of aluminum sulfate in clarified alum is determined using the first derivative titration technique. Using lead perchlorate as the titrant and a lead electrode as the endpoint indicator, the Orion 960 Titrator PLUS determines the endpoint of lead sulfate and calculates the aluminum sulfate stoichiometrically.

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<b>Industry</b>	Chemical Industry
<b>Species Measured</b>	Aluminum Sulfate
<b>Sample</b>	Aluminum Clarifier
<b>Sample Size</b>	10mL
<b>Typical Concentration</b>	57% w/w
<b>Technique</b>	# 6 First Derivative
<b>Electrode</b>	Lead 9482BN; DJ Ref 900200
<b>Solutions</b>	0.1M acetate buffer; methanol/formaldehyde reagent; 25mL deionized water and 2mL acetate buffer
<b>Sample Prep</b>	Accurately pipet 1 mL of the 10 fold diluted sample into an analysis beaker containing 25 mL of methanol/formaldehyde reagent, 25 mL of deionized water and 2 mL of the acetate buffer. Enter sample volume as 0.1 mL since this sample was 10 fold diluted.

## Statistics

<b># of Trials</b>	5	<b>Mean</b>	56.94%w/w	<b>%CV</b>	1.04
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**Analysis Time** 4.1minute(s)

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

## Method Parameters

<b>Sample Volume/Weight</b>	0.100 mL	<b>Timed or Stability Readings</b>	8.0 sec timed
<b>Constant Increment</b>	0.202 mL	<b>Number of Endpoints</b>	1
<b>Max Titrant Volume</b>	3.50 mL	<b>Desired Units</b>	% w/v
<b>Molecular weight</b>	594.36 g	<b>Predose</b>	1.010 mL
<b>Prestir</b>	15.0 sec	<b>Additional Parameters</b>	
<b>Reaction Ratio</b>	0.3333		