



# Thermo

ELECTRON CORPORATION

Potentiometric Titration Application Notes

Applications Log # 239

## Overview

The concentration of ammonia was determined by an Orion technique called KAP Analysis. Aliquot of an ammonium chloride standard are added automatically to a sample in water containing an Orion ammonia electrode. The Orion 960 Autochemistry System calculates the electrode slope, sample concentration, and verifies the results through a spike recovery test. These analysis was done on 1% and 54% lithium bromide solution.

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<b>Industry</b>	Chemical Industry
<b>Species Measured</b>	Ammonia
<b>Sample</b>	Lithium Bromide
<b>Sample Size</b>	5mL
<b>Typical Concentration</b>	50 ppm(v)
<b>Technique</b>	# 2 Multiple Known Addition
<b>Electrode</b>	Ammonia 9512BN
<b>Solutions</b>	0.1M NH <sub>4</sub> Cl ammonium STD 951006; pH adjusting ISA 951211; electrode internal fill 951001; 0.2M Na <sub>2</sub> EDTA EDTA solution 650501; deionized water
<b>Sample Prep</b>	For the 1% solution, accurately pipet 25 mL of sample into an analysis beaker, then add 1 mL of ISA, and 35 mL of deionized water. For the 54% solution, accurately pipet 5 mL of sample into an analysis beaker, then add 5 mL of EDTA, 1 mL of ISA, and 40 mL of deionized water. EDTA was added to eliminate possible interference from metals present in the sample which can bind to ammonia.

## Statistics

<b># of Trials</b>	5	<b>Mean</b>	50.72ppm(v)	<b>%CV</b>	2.19
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**Analysis Time** 4.3minute(s)

**Comments** Rinse the electrodes, stirrer, and dispenser probe between measurements with deionized water. Start analysis immediately after addition of the reagents.

## Method Parameters

<b>Sample Volume/Weight</b>	25.00 mL	<b>Timed or Stability Readings</b>	3.0 mV/min stability
<b>Constant Increment</b>	18.0 mV	<b>Number of Endpoints</b>	1
<b>Max Titrant Volume</b>	10.0 mL	<b>Desired Units</b>	ppm - v
<b>Molecular weight</b>	17.00 g	<b>Predose</b>	none
<b>Prestir</b>	10.0 second(s)	<b>Additional Parameters</b>	Total Solution volume = 61.00 mL, Precision = 2.0%
<b>Reaction Ratio</b>	1.00		