



CERTIFICATE OF ANALYSIS

Amino Acids Calibration Standard with Norleucine For Lithium Systems 011006P

Product: Native Sample Calibration Standard (With Norleucine) for Lithium Systems

Part Number: 011006P

Lot Number: 302021

Production Date: 01 Feb 2013

Expiration Date: 01 Feb 2016

Primary Application: This calibration standard is a solution of 43 amino acids and ammonia in 0.27 N Lithium citrate buffer, pH 2.36. This calibration standard is intended to be used for calibration of chromatographic instrumentation for determination of amino acids.

Acceptance Criteria: The concentrations for 43 amino acids and ammonia are within $\pm 4\%$ of those stated below. These values are based on the results of HPLC analysis using certified NIST amino acids standard and Sigma amino acids standard.

Compound	Concentrations $\mu\text{M}/\text{mL}$
β -Alanine	0.25
L-Alanine	0.25
D,L- α -amino-adipic acid	0.25
γ -Amino-butyric acid	0.25
L- α -Amino- <i>n</i> -butyric acid	0.25
D,L- β -Amino- <i>i</i> -butyric acid	0.25
L- α -Amino- β -guanidinopropionic acid	0.25
Ammonia	0.25
L-Anserine	0.25
L-Arginine	0.25
L-Asparagine	0.25
L-Aspartic acid	0.25
L-Carnosine	0.25
L-Citrulline	0.25
Creatinine	0.25
L-Cystathionine	0.25
L-Cystine	0.25
Ethanolamine	0.25
L-Glutamic acid	0.25
Glycine	0.25
L-Histidine	0.25

Compound	Concentrations μM/mL
L-Homocystine	0.25
D,L&allo-Hydroxylysine	0.25
4-trans-L-Hydroxyproline	0.25
L-isoleucine	0.25
L-Leucine	0.25
L-Lysine	0.25
L-Methionine	0.25
1-Methyl-L-histidine	0.25
3-Methyl-L-histidine	0.25
L-Norleucine	0.25
L-Ornithine	0.25
L-Phenylalanine	0.25
o-Phosphoethanolamine	0.25
o-Phospho-L-serine	0.25
L-Proline	0.25
Sarcosine	0.25
L-Serine	0.25
Taurine	0.25
L-Threonine	0.25
L-Tryptophan	0.25
L-Tyrosine	0.25
Urea	0.25
L-Valine	0.25

Analysis Certified by: Jim Murphy **Date:** 07 Mar 2013
President
Title