



CERTIFICATE OF ANALYSIS

Amino Acids Calibration Standard (Without Norleucine and α -Amino- β -Guanidinopropionic acid) For Lithium Systems 1700-0170

Product: Amino Acids Calibration Standard (Without Norleucine and α -Amino- β -Guanidinopropionic acid) for Native samples

Part Number: 1700-0170

Lot Number: 111036

Production Date: 22 Nov 2011

Expiration Date: 22 Naov 2014

Primary Application: This calibration standard is a solution of 41 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 41 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 μ M/mL |
|---|------------------------------|
| β -Alanine | 0.25 |
| L-Alanine | 0.25 |
| D,L- α -amino-adipic acid | 0.25 |
| γ -Amino-butyric acid | 0.25 |
| α -Amino- <i>n</i> -butyric acid | 0.25 |
| D,L- β -Amino- <i>t</i> -butyric acid | 0.25 |
| L-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 |
| L-Glycine | 0.25 |
| L-Histidine | 0.25 |

| | |
|-------------------------------|---------------------------------|
| L-Homocystine | 0.25 |
| Compound | Concentrations μM/mL |
| 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-Ornithine | 0.25 |
| L-Phenylalanine | 0.25 |
| <i>o</i> -Phosphoethanolamine | 0.25 |
| <i>o</i> -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:** 23 Nov 2011
VP Operations
 Title

Rev. 2, 11/28/2011