



# CERTIFICATE OF ANALYSIS

## Amino Acid Calibration Standard with Norleucine for Lithium Systems 011006P

**Product:** Native Sample Standard (With Norleucine) in Lithium Citrate Buffer

**Part Number:** 011006P

**Lot Number:** 807030

**Production Date:** 21 Sept 2018

**Expiration Date:** 20 Sept 2018

**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 Sigma amino acids standard and QC certified 011006P lot.

Compound	Concentrations $\mu$ M/mL
$\beta$ -Alanine	0.25
L-Alanine	0.25
D,L- $\alpha$ -amino-adipic acid	0.25
$\gamma$ -Amino-butyric acid	0.25
L- $\alpha$ -Amino- <i>n</i> -butyric acid	0.25
D,L- $\beta$ -Amino- <i>i</i> -butyric acid	0.25
L- $\alpha$ -Amino- $\beta$ - 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 $\mu\text{M}/\text{mL}$
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
<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

**Storage Conditions: Keep frozen**

**Analysis Certified by:** Jim Murphy **Date:** November 20,2018  
President  
Title